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ABSTRACT

The educational system of Mexico is described, and guidelines concerning the academic placement of students who wish to study in U.S. institutions are provided. After considering the structure of the educational system, attention is directed to preschool, primary, and lower secondary education. Descriptions are provided of: lower secondary programs leading to further education, programs not leading to further education (vocational, commercial, and artistic training); special education; and nonformal education. Upper secondary education is also covered, including certificates and qualifications, nonformal education, grading, general academic study programs, vocational programs, and teacher training programs. Overviews of higher education and graduate education are provided, and types of public and private institutions are described. Guidelines for U.S. admissions officers cover: Mexican degrees and qualifications, determining educational levels, evaluation of the secondary curricula, transfer of credit from Mexican institutions, and Mexican scholarship programs. Appendices include: a list of schools with Bachillerato programs incorporated into the Universidad Nacional Autonoma de Mexico; a list of higher education institutions and their institutional classification; and sample institutional documents. (SW)

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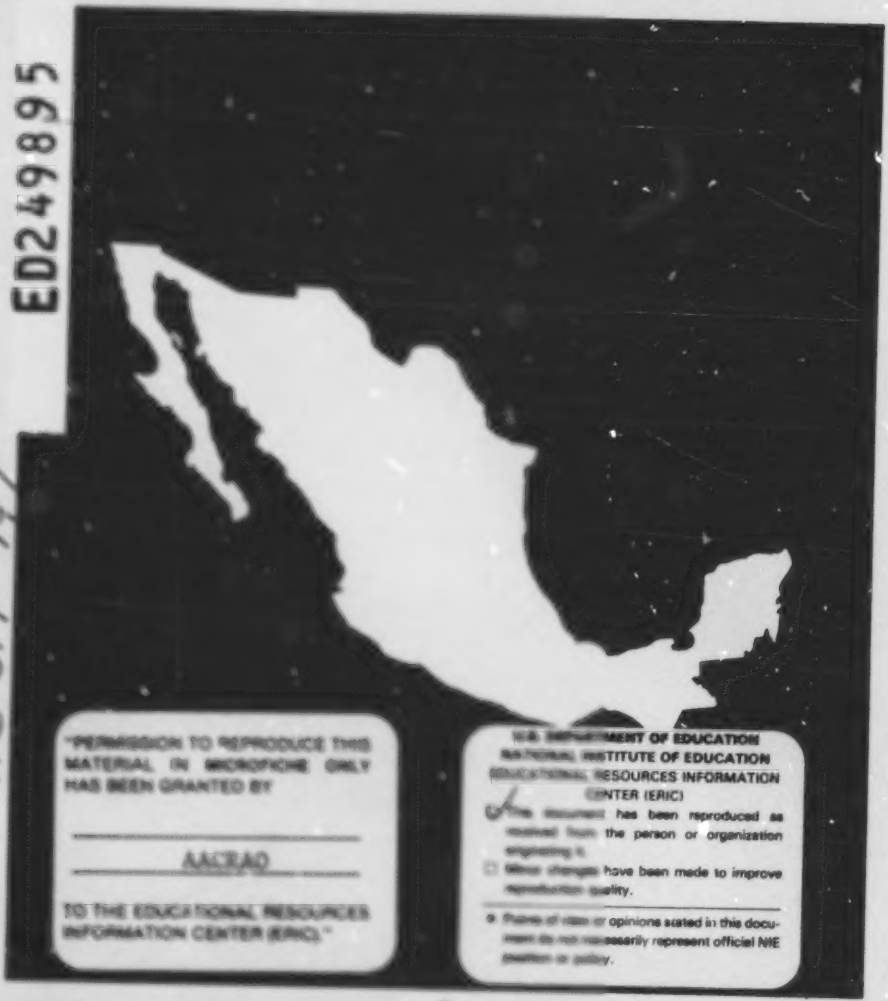

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Mexico

A Study of the Educational System of Mexico and a Guide to the Academic Placement of Students in Educational Institutions of the United States

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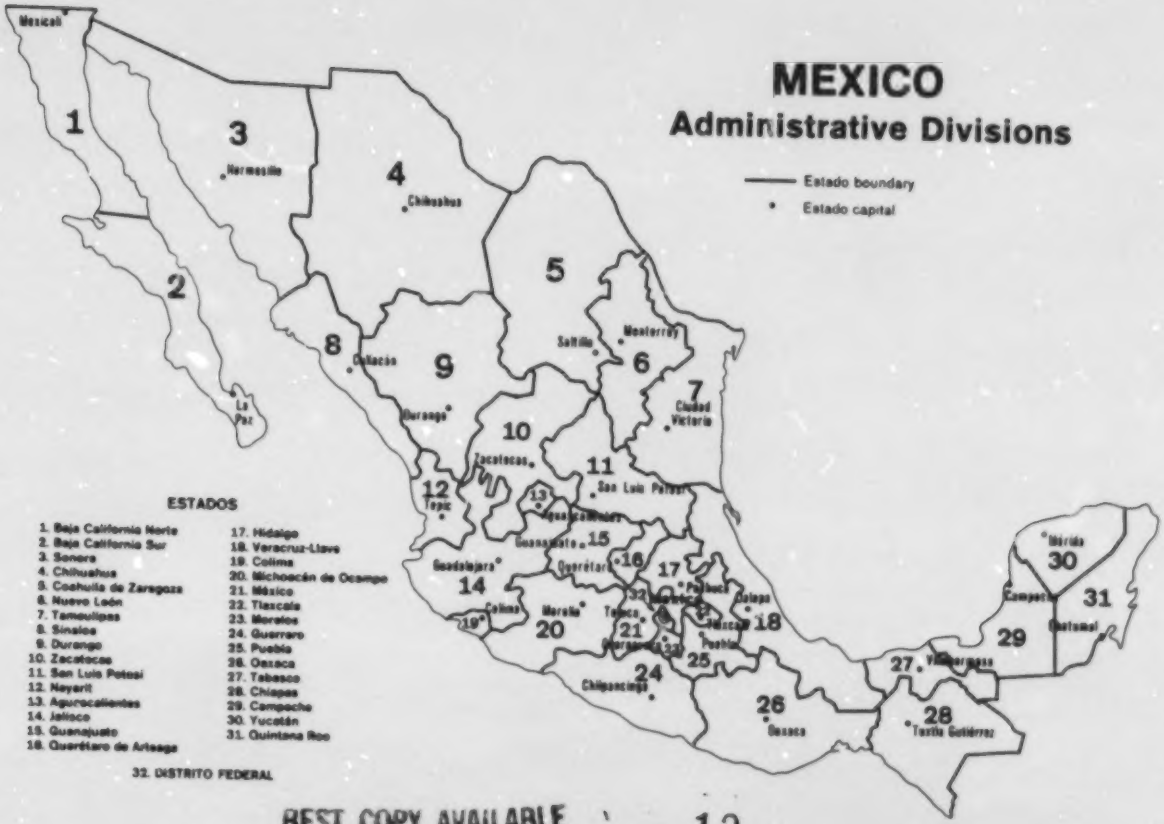
Preface

Many dedicated persons in the United States and in Mexico contributed to the production of this volume, and working with them has been one of the most rewarding aspects of the project. More than any other one individual, Gary Hoover of the University of the Pacific in his role as monitor left an indelible stamp on the volume through his painstaking efforts to make the information accessible, accurate, and clear. I would also like to thank Deborah Triol of the University of Miami whose knowledge of the Mexican educational system contributed immeasurably to my own understanding. Others to whom I would like to express my appreciation include Rebecca Dixon of The American University, who suggested that I apply for authorship; Caroline Aldrich of California State University-Chico, chairperson of the World Education Series (WES) Committee the past three years, who was unfailing in her support; and Jim Frey of Educational Credentials Evaluators, Inc., who made careful notes on the draft and encouraged me throughout the process. Only Lucy McDermott, WES editor, and her assistant, Henrianne Wakefield, know how much I depended on them for assistance and support.

I am grateful to the ANUIES staff for making their facilities and documentation accessible, and to the many Mexican administrators and educators who took the time to share their views on Mexican education. I especially wish to thank Alfonso Rangel Guerra of the Ministry of Education for giving so generously of his time in personal discussions and in reading the draft, and Humberto Cantú of the Monterrey Institute of Technology and Higher Education for his interest and involvement in the project. Recognition is also due the Ministry of Education of the state of Nuevo León for the excellent organization of our meetings with officials. And I am indebted to the Institute of International Education, particularly Rene Greenwald and Maria Teresa Frias, for arranging the Mexican itinerary.

At my own institution, I must express special appreciation to Joe W. Neal of the International Office of The University of Texas at Austin, whose own interest in Mexico is longstanding. He allowed me to take on the book, and offered essential support throughout its production. I also wish to thank the staff members of the International Office, particularly Elizabeth Baker, Ken Kolinek, Sharon Lee, Frances Lewis, Melinda Nelson, Linda Thompson, and Becky Williams, whose efficiency and assistance enabled me to take the time necessary to complete this project.

Finally, I would like to thank my husband, Teodoro, for his patience and optimism, and my little son, Mario, for waiting until the right moment to be born.



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Chapter One

Introduction

Official Name: Estados Unidos Mexicanos (United Mexican States).

Location and Size: 761,601 square miles, located immediately south of the United States. Third largest nation in Latin America.

Government: Federal republic, based on 1917 Constitution, with a strong executive, a bicameral congress, and a judiciary. Dominated by a single political party, Partido Revolucionario Institucional/PRI (Institutional Revolutionary Party), since 1929.

Political Subdivisions: The Distrito Federal (Federal District), which is the seat of government, and the following 31 states: Aguascalientes, Baja California, Baja California Sur, Campeche, Chiapas, Chihuahua, Coahuila, Colima, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, México, Michoacán, Morelos, Nayarit, Nuevo León, Oaxaca, Puebla, Querétaro, Quintana Roo, San Luis Potosí, Sinaloa, Sonora, Tabasco, Tamaulipas, Tlaxcala, Veracruz, Yucatán, Zacatecas. Baja California Sur and Quintana Roo are former territories, which became states in 1974. Each state is a separate unit, with legislative powers in certain areas, including education.

Population: Estimated at 65,770,000 in 1979. Highest population growth rate in the world in late 1960s and early 1970s. Almost half of the population was below 15 years of age in 1979.

Languages: Although the official language is Spanish, monolingual indigenous groups, which speak one of several dozen languages, constitute 7% to 10% of the population.

Religion: Over 90% of the population is Roman Catholic. There is official separation of church and state.

Geography: Approximately two-thirds of the country is mountainous. There are two principal mountain ranges, the Sierra Madre Occidental and the Sierra Madre Oriental, which begin in the north and join south of Mexico City. Almost half of the land is arid. Coastal lowlands are tropical.

Cities: The estimated populations of the three largest cities were as follows in 1978: Mexico City, Federal District, 8,988,230; Guadalajara, Jalisco, 1,813,131; Monterrey, Nuevo León, 1,054,029.

Selected Historical Events:

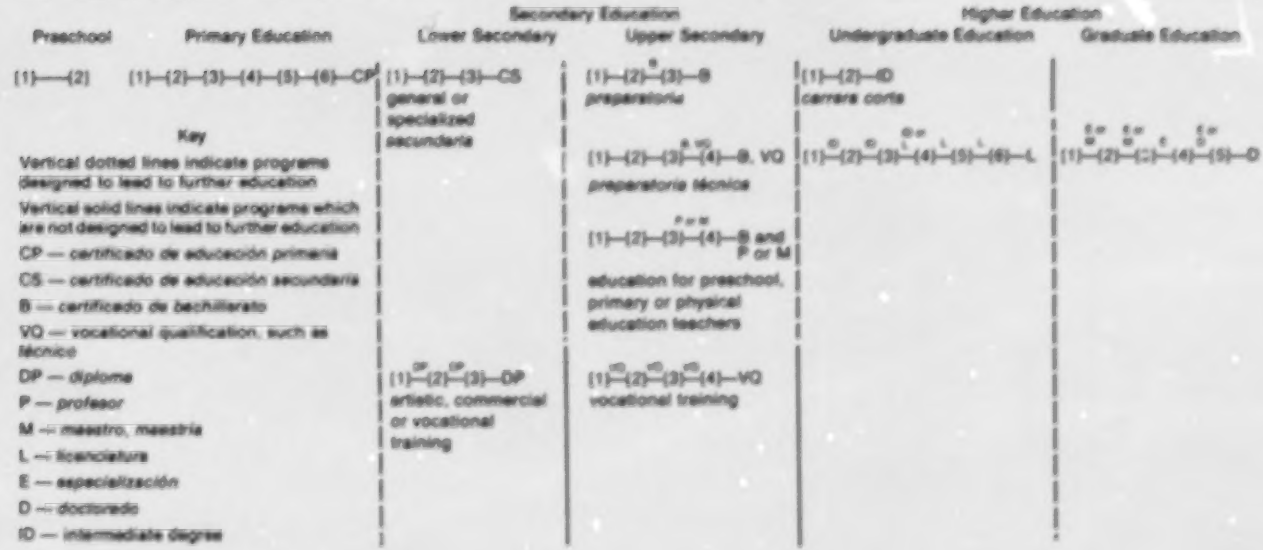
1519 Arrival of the Spanish.

1551 Real y Pontificia Universidad de México founded by royal decree.

NOTE: Much of the information in this chapter has been taken from Thomas E. Weil, *Area Handbook for Mexico*, 2d ed. (Washington, D.C.: American University Press, 1975); and *World Almanac, The, and Book of Facts, 1981* (New York: Newspaper Enterprise Association, 1981).

Table 1

The Educational System of Mexico, 1981



1810 Beginning of the war of independence from Spain.
1824 Mexico becomes a federal republic.
1846-1848 War is fought with the United States over the annexation of Texas. The Treaty of Guadalupe Hidalgo cedes Upper California, New Mexico, and northern parts of Mexico to the United States.
1857 Church and state are separated by the Constitution.
1910 Mexican revolution is fought against the administration of Porfirio Díaz.
1917 The Constitution, which is still in effect today, is adopted.
1921 The federal Secretaría de Educación Pública/SEP (Ministry of Education) is established.

Structure of the Educational System

The Mexican educational system, as outlined in Table 1, is comprised of three basic levels: *educación primaria* (primary education), *educación media* (secondary education), and *educación superior* (higher education). Preschool education is not considered part of the formal educational system. Secondary education is divided into two levels, lower and upper. The lower secondary level has become increasingly linked to primary education, while upper secondary education still is largely under the auspices of institutions of higher education.

1917 Constitution. According to the 1917 Constitution, which established the legal framework for the Mexican educational system, the responsibilities for education are shared by the federal, state, and municipal governments. Private institutions are allowed to offer any kind of education except religious instruction; however, certain limitations are imposed on institutions offering primary and lower secondary education and education for teachers and workers. The shared responsibility for education and the relative freedom of private institutions have led to the development of a diverse educational system, particularly at the upper secondary, undergraduate, and graduate levels.

Official Validity of Programs of Study. The limitations on primary and lower secondary education and education for teachers and workers require that private institutions receive prior authorization from the state or federal government to offer one of these programs. Thus, institutions offering these programs follow the curriculum established by the federal or state government. Other types of education, on the other hand, are not subject to any centralized authority. Nonetheless, the Mexican system of *validez oficial de estudios* (official validity of study) has provided a measure of control without infringing upon the independence of institutions.

The system of official validity actually establishes the legal standing of programs of study at the upper secondary, undergraduate and graduate levels. Its origins lie in the need to confirm the legal standing of programs which prepare students for the practice of certain professions. It has evolved, however, into a means for institutions to establish the "worth" of their programs of study (in relationship to other institutions). Official validity has played an important role in the development of the Mexican educational system. The manner in which institutions have acquired validity for their

programs of study has created a complex network of relationships among institutions, and between institutions and the state or federal governmental agencies responsible for education. In Mexico, institutions are categorized in accordance with the nature or source of their programs' official validity (or lack of it).

There are three types of public institutions in Mexico: public autonomous, public state, and institutions dependent on the federal government. There are also three types of private institutions: private *libre* (free or independent) institutions, institutions some of whose programs of study have been "incorporated" or recognized (and thus have official validity), and institutions whose programs do not have official validity. Certain generalizations can be made about institutions in each of these categories, particularly in terms of funding and the source of official transcripts. Generalizations can even be made concerning the programs of study offered in each category, since institutions within a category often share, at least to some extent, a common educational model. In the chapters that follow, these categories provide a framework for discussion of the institutions and programs which comprise the Mexican educational system.

Recent Legislation. Institutional independence at the upper secondary and tertiary levels and the resulting diversity of programs have complicated efforts to plan for the future and have led some to question the ability of the Mexican educational system to respond to the needs of the nation. Recent legislation, including the 1973 Federal Education Law, the 1975 National Adult Education Law, and the 1978 Law for the Coordination of Higher Education, has been enacted, at least in part, to make the system somewhat more uniform and to encourage institutions to adopt programs and policies perceived by the federal government to be important. All of these laws, however, while protecting the rights of individual institutions, establish policies that apply, at least in theory, to all of them.

The 1973 Federal Education Law was passed in response to specific recommendations of the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education). It provides for, among other things, a national system of credit by examination to be established by the Secretaría de Educación Pública/SEP (Ministry of Education). It also calls for the creation of programs of study to prepare students for both further education and specific employment. The 1975 National Adult Education Law was passed to increase educational opportunities for persons age 15 or over who have not completed primary or lower secondary school. Finally, the 1978 Law for the Coordination of Higher Education establishes the federal government's right to carry out educational planning in accordance with the developmental needs of the nation.

These laws already have begun to influence education in Mexico, although for the most part their full impact remains to be seen. Despite the apparent trend toward uniformity, the laws in no way reduce the power of state governments or private organizations to participate in education. In fact, the laws tend to reinforce the system of official validity which has provided a legal framework for institutional diversity.

Chapter Two

Preschool, Primary, and Lower Secondary Education

Overview

Primary and lower secondary education in Mexico are controlled by the federal government through the Secretaría de Educación Pública/SEP (Ministry of Education). Nursery schools are not officially part of the educational system, but many large industries and government agencies, including the SEP, provide nursery schools for children of their employees. The SEP also operates many kindergartens and serves other types of kindergartens, such as state or private, in an advisory capacity.

While kindergartens, primary schools, and lower secondary schools may be described as federal, state, municipal, private, or a combination of these (according to their source of financing), the SEP is responsible for the academic calendar, curriculum content, textbook distribution, grading scales, and graduation requirements in all types of primary and lower secondary schools. Private kindergartens must register with the SEP, but they do not need its approval or authorization to operate. Private primary and lower secondary schools, however, are required to have this authorization. To receive it, private schools must, among other things, follow the SEP's prescribed curriculum. Private primary schools are also required to provide a number of scholarships in the form of free tuition to 5% of the school's total enrollment. These scholarships are distributed by the SEP.

Although the 1917 Constitution specifically prohibits religious groups from participating in certain levels of education, including primary and lower secondary, religious groups are allowed to operate primary and lower secondary schools, as long as they adhere to the SEP's requirements for private schools and limit their religious instruction. In 1978-79, 8.8% of all kindergarten students, 4.7% of all primary school students, and 23.1% of all lower secondary school students were enrolled in private schools.[1]

The 1917 Constitution required only the six-year primary school cycle to be free and compulsory. Even though there are still not enough primary schools to accommodate all children, the 1977 Education Plan proposes that the primary and lower secondary cycles be combined into a compulsory nine-year cycle. The 1978 presidential *Informe (Report)* proposes that a year of preschool education be added to yield ten years of free, compulsory education. It is felt that this would provide more continuity between primary

1. *Tercer Informe de Gobierno, Sector Educativo, 1979* (México, D.F., 1980), pp. 25-35.

and lower secondary school and encourage students who complete primary school to continue through lower secondary school.

To increase educational opportunities, the Mexican government began a Programa Nacional de Educación a Grupos Marginados (National Program of Education for Disadvantaged Groups) in 1978 with the slogan *Educación para Todos* ("Education for All"). Many of the projects of the National Program of Education for Disadvantaged Groups have been carried out through the system of nonformal education which was greatly expanded by the 1973 Federal Education Law and the 1975 National Adult Education Law.

Calendar and Grading

All schools under the jurisdiction of the SEP now have a single calendar. Before 1965, there were two school calendars, depending on the climate of the region. A gradual consolidation, beginning in 1965 and ending in 1970, yielded a uniform school year of almost nine months, which begins on September 2 and ends on June 29 with vacations in December and April.

A 1979 presidential *acuerdo* (agreement) established a grading scale of 5 to 10, with 6 the lowest passing grade in all primary and lower secondary schools. Although this scale replaced the previous system which was based on descriptive grades, descriptive grades are still sometimes used and can be equated to the numerical scale as follows: 10 = E/*excelente* (excellent); 9 = MB/*muy bien* (very good); 8 = B/*bien* (good); 7 = R/*regular* (average); 6 = S/*suficiente* (sufficient); 5 = NS/*no suficiente* (not sufficient).

Under the previous grading system, the letters sometimes represented a numerical value different from the one listed above. Also, different letters were sometimes used, such as NA/*no acreditada* (not passing). However, the grading scale used usually appears on the certificate itself. (See sample document 1 in Appendix D.)

Preschool and Primary Education

Preschool education actually consists of two phases, *educación inicial* (nursery school) and *jardín de niños* (kindergarten). Although the SEP operates some nursery schools called *centros de desarrollo infantil* (centers for child development) which care for children under age 4, *educación pre-escolar* (preschool education) usually refers only to kindergarten, which is optional for children under 6. Since private kindergartens are not required to seek SEP authorization in order to operate, programs in that sector may vary from one to three years in length. However, at the SEP's urging, many kindergartens have recently begun offering only one year of preschool preparation, in an effort to accommodate more children. In 1978-79, 16% of the population between the ages of 4 and 5 was enrolled in preschool. Preschool teachers are usually prepared in the upper secondary level *escuelas normales* (normal—teacher training—schools). However, they are sometimes prepared at the tertiary level. (For more information on both levels of training, see the discussions of teacher training in Chapters III and IV.)

The six-year *escuela primaria* (primary school) is compulsory for all children between the ages of 6 and 14 who have not already completed primary school. Public schools are free. All schools, even private schools, are required to use the free textbooks written and distributed by the SEP.[2] Primary school teachers are usually prepared in the upper secondary level normal schools. Some primary teachers are also prepared at the tertiary level.

Institutions offering primary education may be called *colegios* ("colleges") or *institutos* (institutes), as well as *escuelas* (schools). The 1917 Constitution requires agricultural, industrial and mining enterprises to maintain schools for their workers' children if there are no schools in the vicinity; these schools are called *escuelas artículo 123* (article 123 schools) after the article which mandates their existence. When several incomplete primary schools feed into a single school where students may complete their primary education, that school is called an *escuela de concentración* (concentration school). *Escuelas primarias asistenciales* (assistance primary schools) assist their students through scholarships and other forms of financial aid.

Primary classes meet five days a week, five hours per day. The curriculum is organized around seven basic areas: Spanish language arts, mathematics, social sciences, natural sciences, artistic education, physical education, and technological education. All seven areas are taught in each grade of primary school. Each area constitutes a year-long course which is divided into eight units that more or less correspond to the eight months of the school year. Each unit is composed of specific objectives, which serve to measure students' performance. Each objective serves as a prerequisite to the next objective. Promotion is not determined by standardized examinations but by teachers' on-going evaluation of performance, aptitude and behavior.[3] Completion of primary school is indicated on the *certificado de educación primaria* (transcript of primary education), which specifies the name of the school and carries the seal of the SEP. Transcripts issued by private institutions will also show the date and number of the *acuerdo* (agreement) with the SEP which authorizes them to operate.

Under the 1959-70 Eleven Year Plan, progress was made in extending primary education to more children. By the 1978-79 school year, 91.8% of the population between the ages of 6 and 14 were enrolled in or had finished primary school.[4] Educational opportunities are still greater in urban than in rural areas, where often there are not enough children of school age to warrant a primary school. In 1978-79, only half of all primary schools were complete; that is, half offered fewer than six years of education.

Efficiency is also a problem. Of those students enrolled in the first grade of primary school in 1972-73, 44% graduated six years later. One difficulty is in providing education to the approximately one million monolingual

2. Secretaría de Educación Pública, *Normas Fundamentales* (México: Dirección General de Publicaciones y Bibliotecas de la Secretaría de Educación Pública in Talleres Gráficos de la Nación, 1980), pp. 5-12.

3. Secretaría de Educación Pública, *Plan y Programas de Estudio para la Educación Primaria*, Consejo Nacional Técnico de la Educación (México, D.F.: Comisión Nacional de los Libros de Textos Gratuitos, 1977).

4. *Tercer Informe de Gobierno, Sector Educativo, 1979*, p. 29.

indigenous people of Mexico who do not speak Spanish; this is complicated by the fact that most of them live in small communities in rural areas.[5] Extending educational opportunities becomes even more difficult due to the six million people over 15 years of age, apart from the monolingual indigenous groups, who have not yet learned to read or write, the 13 million adults who have not finished primary school, and the 7 million who have not finished lower secondary school.[6]

One objective of the National Program of Education for Disadvantaged Groups is to increase primary school attendance and efficiency. To this end, the program has sponsored a number of research projects. Through the program, 7,500 new primary schools were opened in 1979-80 in areas which previously had no school. In the same year, 3,000 formerly incomplete primary schools began offering all six grades. New teachers were offered financial compensation to teach in rural areas, and training programs were instituted to aid primary teachers in "unitary" schools in which up to six grades are taught in one room. Bilingual instructors were engaged to teach Spanish in a preschool setting to monolingual indigenous children, ages 5 to 7, and more opportunities for bilingual primary school instruction were instituted. Finally, through the system of nonformal education, adults have been encouraged to learn to read and write, and to complete primary and lower secondary school. As a result of this effort, it is estimated that 28% of the total Mexican population was engaged in some form of education during the 1979-80 school year.[7]

Lower Secondary Education

Educación media (secondary education) is offered at two levels: a lower level which usually consists of three years of education, and an upper level of two or three years. The lower level, which immediately follows primary school, is referred to as *nivel medio básico* or *ciclo medio básico* (lower or basic middle level/cycle). Most of the programs of study offered at this level are designed to lead to further education; however, some programs do not.

Programs of study at this level which lead to further education are designated as *educación secundaria* or *ciclo de enseñanza secundaria*. Although the term *secundaria* may be translated as secondary, in Mexico its use always refers to the first three years of secondary school, not to the entire secondary school sequence as in the United States. Lower secondary level programs which do not lead to higher education are never designated *secundaria;* however, the level at which they are offered is often referred to as *nivel medio básico* (lower or basic middle level). Other designations for the level of studies, which always indicate programs which are not designed to lead to further education, include *nivel medio elemental* (elementary middle level) and *nivel medio terminal* (terminal middle level).

5. *Ibid.*, p. 28.

6. Secretaría de Educación Pública, *Programas y Metas del Sector Educativo, 1979-82*, Dirección General de Publicaciones y Bibliotecas de la Secretaría de Educación Pública (1979), pp. 15-16.

7. *Tercer Informe de Gobierno, Sector Educativo, 1979*, pp. 8-10.

Lower Secondary Education Leading to Further Education

Educación secundaria was originally part of a five-year university preparatory program. Schools offering this program were first supervised by the church and later by the universities. In 1926, the first three years of the five-year preparatory program were removed from university control, and the lower secondary level became a distinct unit in the educational system.[8]

Educación secundaria is offered in many different types of schools. As with primary education, these schools are classified according to their source of financing: private, municipal, state, federal, or a combination of these (private institutions may not operate without the authorization of the SEP). Unlike primary education, however, *educación secundaria* may be specialized according to subject: agriculture, commerce, fine arts, fishing, industry, and teacher training. *Secundaria* programs are also offered in night schools and in various nonformal settings.

Although most *secundaria* programs are offered in separate schools, an institution of higher education may administer a lower secondary school, as well as an upper secondary school, even though the *secundaria* curriculum is no longer determined by the institution of higher education. Thus, the transcript may be headed by the name of the university even though the level of instruction is lower or upper secondary. The following institutions of higher education are known to offer *secundaria* programs:

> Instituto Tecnológico Mexicano (Mexican Technological Institute); Universidad Autónoma de Aguascalientes (Autonomous University of Aguascalientes); Universidad Autónoma de Guadalajara (Autonomous University of Guadalajara); Universidad Femenina de México (Feminine University of Mexico); University Michoacana de San Nicholás de Hidalgo (Michoacán University of San Nicholás of Hidalgo); Universidad Motolinia (Motolinia University); Universidad Nacional Autónoma de México/ UNAM (National Autonomous University of Mexico).[9]

Although admission requirements to *secundaria* programs vary with specific institutions, general requirements include completion of primary school and an entrance examination. In 1979, it was estimated that 81% of primary school graduates enrolled in some type of *secundaria* program.[10]

Most *secundaria* teachers are prepared at the tertiary level in *escuelas normales superiores* (higher normal—teacher training—schools); however, some are educated in other institutions of higher education. Teachers of technical subjects in the specialized *secundaria* programs are educated at the upper secondary level in *escuelas nacionales de maestros de capacitación para el trabajo* (national schools for teachers of vocational training).

On successful completion of any type of *secundaria* program, students receive a transcript which allows them to continue their studies at the upper

8. Clark Gill, *Education in a Changing Mexico* (Washington, D.C.: Government Printing Office, 1969), p. 48.

9. Asociación Nacional de Universidades e Institutos de Enseñanza Superior, *Instituciones de Educación Superior, Directorio 1978-1979* (México, D.F.: Imprenta Ajusco, 1979).

10. *Tercer Inform. de Gobierno, Sector Educativo, 1979*, p. 35.

secondary level. (See sample document 1 in Appendix D.) This transcript, *certificado de educación secundaria*, is basically the same for any type of *secundaria* program. The transcript from technical or artistic *secundaria* programs specifies the student's specialization, most recently in the form of a number which corresponds to a certain specialization taken from a list on the back of the certificate. Sometimes, a separate diploma is given in the area of specialization. The special diploma alone, however, does not indicate completion of a *secundaria* program, since many short vocational training programs at the lower secondary level also issue diplomas in some of the same specializations.

Although all *secundaria* programs are considered equivalent, graduates of technical *secundaria* programs who continue their education may be more likely to enroll in a technical upper secondary school than in a general upper secondary school. However, graduates of any type of *secundaria* program may apply to any type of upper secondary school; admission depends on the individual institution's admission requirements. Most *secundaria* graduates do choose to continue their studies at the upper secondary level.

CURRICULUMS

The curriculums for all types of *secundaria* programs are prescribed by the SEP and have been undergoing considerable reform. A new *secundaria* program went into effect in 1975. It continues most of the primary school subjects (Spanish, mathematics, natural sciences, and social sciences) and adds a foreign language. Biology, physics, and chemistry are added within the natural sciences area, and history, geography, and civics are added within the social sciences. Art education, physical education, and technological education are grouped together under the general heading of *actividades* (activities). The only variation in the *secundaria* curriculum occurs in the activities. Specific courses to be offered in art education, physical education, and technological education are determined by individual schools. Often the same artistic and technological subjects are offered in general *secundaria* programs as are offered in specialized *secundaria* programs; however, the variety of subjects is less than in specialized programs.

A 1978 manual published by the SEP divides each *secundaria* subject into eight units and each unit into objectives. Classes meet five days a week with the following hours per week allotted to each subject: biology, 3; chemistry, 2; civics, 2; foreign language, 3; geography, 2; history, 3; math, 4; physics, 2; Spanish, 4. In general lower secondary schools, 5 hours per week are devoted to activities, for a total of 30 hours of class per week. Specialized lower secondary schools usually devote more than 5 hours per week to the activities component.

General *Secundaria* Programs

Most institutions which offer *secundaria* programs follow the general *secundaria* curriculum in which only 5 hours per week are devoted to the activities component. Students are allowed to choose from among courses offered in

each of the three activities: art education, physical education, and technological education. In general *secundaria* programs, there are fewer artistic and technical courses, and less time is devoted to these courses than in specialized *secundaria* programs. A common technological elective, for example, is a course in typing.[11]

***Secundaria para trabajadores (Secundaria* for Workers).** This program exists to serve students who cannot attend other lower secondary programs because of age or work conflicts. Courses are usually offered at night. The general curriculum is followed, except that no activities are required.

***Secundaria* in Teacher Training Institutions.** Although no teacher training as such occurs at the lower secondary level, some teacher training institutions, particularly private ones, offer *secundaria* programs. The general *secundaria* curriculum is followed. Even in the activities area, which is where some specialization related to the type of school occurs, no teacher training or pedagogical courses are offered.

Specialized *Secundaria* Programs

Some lower secondary schools, usually federally funded, offer certain artistic and technical specializations in addition to the general *secundaria* curriculum. While the general portion of the *secundaria* curriculum prepares students for further education, the specialization also prepares them either for further education in a related field or for entry into the work force. Within the federal system, 53 different specializations are offered, including such diverse areas as *agricultura* (agriculture), *artes gráficas* (graphic arts), *ballet clásico* (classical ballet), *cultura de belleza* (cosmetology), *mecánica automotriz* (automobile mechanics), and *zapatería* (shoemaking), to name a few. Courses dedicated to the specialization replace the activities component of the general *secundaria* curriculum. The rest of the curriculum remains unchanged. The number of hours per week spent studying the specialization varies from 8 to 12. Thus, students in a specialized *secundaria* program spend from 33 to 37 total hours in class per week, while students in general *secundaria* programs spend 30 hours per week.

Technical *Secundaria* Programs. The lower secondary schools which allow students to specialize in a variety of agricultural, commercial, fishing, and industrial fields are called *secundarias técnicas* (technical *secundarias).* The first federal *secundarias técnicas* were established during the period from 1958 to 1964. Until 1967, they were called *escuelas prevocacionales* (prevocational schools) and were actually part of the same federal institutions which offer technical education at the upper secondary and higher education levels. (See the sections on federal technical institutions in Chapters III and IV.) Later, the *escuelas prevocacionales* were separated from the institutions of higher education to be administered by a subsecretariat of the SEP.[12]

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11. "Programas de SEP, Educación Media Básica, Areas y Asignaturas, 1978-79." Courtesy of Editorial Trillas. (xerox)

12. Secretaría de Educación Pública, *Desarrollo del Sistema de Educación Tecnológica 1980-1990,* Subsecretaría de Educación e Investigación Tecnológicas (1980), p. 30.

Within the *secundarias técnicas*, commercial and industrial specializations are offered in *secundarias técnicas industriales* or *escuelas técnicas industriales* (industrial technical schools). (See sample document 1.) Schools which offer agricultural specializations are referred to as *secundarias técnicas agropecuarias* or *escuelas tecnológicas agropecuarias* (agricultural technical schools). Specializations in fishing are offered in *secundarias técnicas pesqueras*, also called *escuelas tecnológicas pesqueras* (technical fishing schools). In 1979-80, there were 384 *secundarias técnicas industriales* with an enrollment of 245,938; 869 *secundarias técnicas agropecuarias* with an enrollment of 203,372; and 33 *secundarias técnicas pesqueras* with an enrollment of 6,306.[13] While it is estimated that only 28% of the total lower secondary school enrollment is in some type of *secundaria técnica*, the SEP's 1981 budget allots more money to technical *secundaria* education than to any other type of *secundaria*.

Artistic *Secundaria* Programs. A variety of artistic specializations are offered by the SEP in conjunction with the Instituto Nacional de Bellas Artes/INBA (National Institute of Fine Arts). Some of the INBA/SEP controlled institutions also offer programs of study at the upper secondary and tertiary levels. *Secundaria de arte* (*secundaria* with specializations in art) is offered in six of the Centros de Educación Artistica (Centers of Artistic Education), which are located in Mexico City, Federal District; Guadalajara, Jalisco; Hermosillo, Sonora; Morelia, Michoacán; Oaxaca, Oaxaca; and Querétaro, Querétaro.

Students desiring a career in dance or music may enroll in one of INBA/SEP's schools of dance or music following primary school and continue studying through the upper secondary or tertiary levels. For example, the Escuela Nacional de Danza Folklórica (National School of Folkloric Dance) in Mexico City offers programs of six or seven years' duration, which include three years of lower secondary education in folkloric dancing. Similarly, the Escuela Nacional de Danza Clásica (National School of Classical Dance) in Mexico City offers an eight- to nine-year program in classical dance which students may enter after their fourth year of primary school. Students enter the Conservatorio Nacional de Música (National Conservatory of Music) at age 12 to begin one of several six- to ten-year programs. (See Chapters III and IV for information concerning fine arts institutions dependent on the SEP.)

Although these programs definitely lead to further education in the fields of dance and music, it is not clear whether they are referred to as *secundaria* programs. Unless the *certificado de educación secundaria* is awarded, it is doubtful that students would be able to leave these programs and enter an upper secondary program preparatory for higher education elsewhere.

Lower Secondary Education Not Leading to Further Education

A wide variety of nonacademic or terminal programs offer cultural enrichment or training in specific vocational skills. While most require the comple-

13. *Tercer Informe de Gobierno, Sector Educativo, 1979*, p. 33.

tion of primary school to enter, some do not require any specific level of education. They are included in this section, however, because the level at which they are offered is often designated *nivel medio básico* (lower or basic middle level) and could be confused with *secundaria* programs offered at the same level. Other designations which are sometimes used, including *nivel medio elemental* (elementary middle level) and *nivel medio terminal* (terminal middle level), also denote postprimary studies.

In such programs, study in secretarial, technical, and artistic fields is offered. The programs range in length from several weeks to three or four years. Courses may be offered in any type of institution—federal, state, municipal, or private. Private institutions are not always required to seek authorization to operate; however, many do choose to register with the SEP or a state ministry of education. Although some institutions offer only nonacademic programs, it is not uncommon for institutions which offer programs at other levels, even universities, to offer short courses in certain fields.

In addition to these vocational training programs offered within the formal educational system, there are several nonformal vocational training programs which are described in the section on nonformal education. Almost 20% of primary school graduates enroll in some type of vocational training program. Of the institutions which offer these programs, 74% are privately funded.[14]

On completion of a lower secondary program which is not designed to lead to further education, usually only a diploma in the field of study is awarded. Public institutions or private institutions registered with the SEP or a state ministry of education may issue official *certificados de estudios* (transcripts) which resemble those awarded for completion of general or specialized *secundaria* programs. However, only lower secondary programs which lead to further education include the designation *secundaria* in their certificates. (See sample Document 1 in Appendix D.)

VOCATIONAL TRAINING

There are 48 Centros de Capacitación para el Trabajo Industrial/CECATI (Centers of Vocational Training for Industry) and Centros de Capacitación para el Trabajo Agropecuario/CECATA (Centers of Vocational Training for Agriculture/Animal Husbandry), administered by the SEP.[15] They offer only vocational training and no general academic training. Most of the *escuelas técnicas industriales, escuelas técnicas agropecuarias,* and the *escuelas técnicas pesqueras* which offer primarily *secundaria* programs also offer the same vocational training programs offered in the Centers of Training. In the 1978-79 school year there were 33,517 students enrolled in 219 rural schools offering this type of vocational training.[16] Although normally students must have completed primary school and be at least 15 years of age to enter, older

14. *Ibid.*, p. 31.

15. Secretaría de Educación Pública, *Estadística Básica del Sistema Nacional de Educación Tecnológica,* Subsecretaría de Educación e Investigación Tecnológicas (1980), p. 9.

16. *Tercer Informe de Gobierno, Sector Educativo, 1979,* p. 30.

students are sometimes admitted without having completed primary school.

Vocational programs range in length from one to four years. Students spend from 12 to 30 hours per week in class, depending on the specialization. Generally, the three- or four-year programs include fewer hours per week in class than the one-year programs. A wide range of agricultural and industrial specializations is offered, many of which are offered as specializations in technical *secundaria* programs. When vocational training and technical *secundaria* programs are offered in the same institution, some of the courses or workshops which comprise the technical specialization may apply to both types of programs.

COMMERCIAL TRAINING

Commercial education is also offered at the *nivel medio elemental* (elementary middle level) or *nivel medio básico* (lower or basic middle level). Unlike other technical vocational programs at this level, the majority of which are federally funded, most commercial schools are private. The first type of vocational education offered in Mexico was commercial; by the time the federal government began to involve itself in vocational education the need for commercial education had already been filled by private institutions. Commercial studies attract more students than any other type of vocational training. While some commercial electives, such as typing and bookkeeping, are offered as the technological activity in general or specialized *secundaria* programs, most commercial studies are nonacademic programs that do not lead to further education. Although institutions of higher education sometimes offer commercial studies, usually secretarial, most commercial programs are offered in private institutions which specialize in this type of vocational nonacademic program.

Programs of commercial study vary in length from a few months to four years; however, most last three years. The programs generally lead to one of the following diplomas: *auxiliar contable* (bookkeeping assistant), *contador administrativo* (administrative bookkeeper), *contador privado* (private bookkeeper), *estenógrafo* (stenographer), *secretaria* (secretary), *secretaria administrativa* (administrative secretary), *secretaria bilingüe* (bilingual secretary), and *secretaria ejecutiva* (executive secretary).

ARTISTIC TRAINING

Studies in fine arts and handicrafts at the *medio elemental* (elementary middle) or *medio básico* (lower or basic middle) levels are often offered by institutions of higher education. Sometimes these studies are offered in a separate school of the institution or in an extension division, such as in the Escuela de Música (School of Music) or the Escuela de Artes Plásticas (School of Plastic Arts). Programs vary from short term continuing education programs to programs of several years' duration.

The Universidad de Guadalajara/UG (University of Guadalajara), for example, offers a few programs which require the completion of primary school for entry. Unlike most programs of study at this level, these are said

to be at the *nivel medio* (secondary level) or at the *nivel técnico profesional* (professional technician level). The Escuela de Música offers a three-year program leading to the diploma, *instructor de música* (music instructor). The program includes courses in Italian and art history as well as in music; however, a large portion of the curriculum is devoted to practice of an instrument or singing. In the Escuela de Artes Plásticas, five-year programs in *pintura* (painting) and *escultura* (sculpture) are offered as well as a two-year program in *fotografía* (photography). All three programs award a *diploma*. The programs in painting and sculpture include courses in art history, a foreign language, and geometry as well as courses in painting or sculpture. The program in photography is divided equally between composition and laboratory.

The federal government also offers programs in art which are not designed to lead to further education. The Instituto Nacional de Bellas Artes/INBA (National Institute of Fine Arts), in cooperation with the SEP, administers several institutions of higher education which offer short courses in art appreciation, performing arts, and handicrafts for persons of all ages and education. Institutions such as the Escuela de Diseño y Artesanía (School of Design and Artisanry), the Escuela Profesional de Teatro (Professional School of Theater), and the Escuela Superior de Música (Higher School of Music) offer short programs of *actualización* (improvement), *capacitación* (training), and *sensibilización* (appreciation) in various art specializations, in addition to their professional programs. Only the Escuelas de Iniciación Artística (Schools of Artistic Introduction) are limited to programs which do not lead to higher education. Students may enter their six-semester programs of introduction to art, dance, music or theater as early as age 8. The only entry requirement is completion of the level of education appropriate to the age of the applicant.

Special Education

Educación especial (special education) is offered to children 6 or older who have learning and/or adjustment problems. Children who have behavioral problems or who are retarded or impaired in vision, hearing, or psychomotor abilities make up what in Mexico is referred to as the population of "atypical" children. Generally, atypical children are grouped together in primary schools and taught by special teachers educated at the tertiary level in the *escuelas normales de especialización* (normal schools—teacher training—for special education). In 1978-79, 183 institutions offered education for atypical children.

Nonformal Education

The nonformal educational system was greatly expanded and strengthened by the 1978 Federal Education Law and by the 1975 National Adult Education Law. The 1978 National Program of Education for Disadvantaged Groups often uses nonformal education to reach people who previously have not

had access to the formal educational system, including adults, monolingual indigenous people, and children in rural areas without access to a primary school. The system includes nontraditional ways to earn the same certificates awarded by the formal educational system. It also includes educational, cultural, and vocational programs which do not lead to formal certification.

Perhaps the most widely used aspect of the nonformal educational system is *educación abierta* (open education). Open education allows students to take examinations to earn certificates at any level without attending school. Although open education is available at the upper secondary and tertiary levels, it is most widely used at the primary and lower secondary levels. Open education is an integral part of many of the nonformal programs described in this section, some of which exist simply to facilitate access to open education. Between 1976 and 1978, 5,100 primary certificates and 7,500 lower secondary certificates were awarded through the system of open education.

The nonformal programs and institutions listed below have been developed to increase educational opportunities for monolingual indigenous people and for children and adults in rural areas. Though some programs are designed specifically to serve the needs of a particular group, often a program is multifunctional.[17]

Nonformal Educational Programs and Institutions

Albergues escolares (school hostels). Located next to complete primary schools, they offer food and lodging to children who live too far from school to commute daily. There were 46,900 students, primarily indigenous, served in 918 *albergues escolares* in 1978-79.

Aulas rurales móviles (mobile rural classrooms). Divided into classrooms and teachers' living quarters, these trailer houses circulate in communities too small to have a school. They offer the first three primary grades, teach adults to read and write, and foster educational development in the community. In 1977-78, there were 400 mobile classrooms: 1,945 adolescents and adults learned to read and write, and 10,647 children were enrolled in primary school.

Brigadas para el desarrollo rural (rural development brigades). Staffed with technicians, they circulate in 427 specific rural communities to provide the technical assistance necessary to improve economic situations of families or communities.

Brigadas para el mejoramiento indígena (brigades for indigenous improvement). Staffed by technicians, these 36 brigades work with leaders in indigenous areas to plan, execute, and evaluate community development projects.

Centros de acción educativa (centers for educational action). Formerly known as *centros de acción ocupacional* (centers for occupational action). The 55 centers provide vocational training courses of up to 3 months' duration in carpentry, dressmaking, driving, home electric installation, locksmithing, sales, sanitary installations (plumbing), shoemaking, tailoring, and watchmaking.

Centros de educación básica para adultos/CEBA (centers for basic adult education). Offer accelerated primary education tailored to students' abilities. In 1978-79, the 978 centers graduated 21,000 students.

Centros de enseñanza ocupacional (centers for occupational instruction). Offer vocational training to literate adolescents and adults. There were 84 centers in 1978-79.

17. *Tercer Informe de Gobierno, Sector Educativo, 1979*, pp. 53-60.

Centros de integración social (centers for social integration). Offer intensive primary education and vocational training to indigenous adolescents who may return to their communities as *promotores bilingües* (bilingual instructors). The 28 centers served 4,135 students in 1978-79.

Centros regionales de educación fundamental (regional centers for fundamental education). Provide intensive primary education and vocational training to literate adolescents, ages 12 to 15, who have not completed primary school. In 1976-77, 28 centers served 4,740 students.

Cursos comunitarios (community courses). Provide primary education to communities with fewer than 30 children with funds from the community, state, or federal governments. A lower secondary school graduate teaches the first few grades of primary school, and generally promotes educational and cultural community activities.

Escuelas unitarias (unitary schools). Exist in communities with between 40 to 60 school-age children. All six primary grades are taught by one teacher during the day or in the evening in return for a regular monthly salary and *compensación comunitaria* (community compensation).

Misiones culturales rurales (rural cultural missions). Consist of itinerant teams of 8 to 10 specialists assigned to several communities for 2 to 3 years to provide nonformal education in such areas as health and agriculture, and to promote community development. In 1978-79, 215 misiones served 645 communities with a total population of 202,888.

Procuradurías (legal services). Provide legal advice and defense to indigenous people who must deal with outside authorities over penal, civil, labor, administrative, and agrarian problems.

Radioprimaria. Broadcasts primary school curriculum by radio to rural children who do not have access to complete primary schools. First used by Jesuit missionaries in 1951 to teach primary school in the state of Chihuahua. In 1970, the federal government began a *radioprimaria* project in a rural area near San Luis Potosí to provide the last three years of primary school. However, *radioprimaria* is not mentioned in current publications of the SEP. The Programa de Apoyo Radiofónico Bilingüe (Program of Bilingual Radio Support), which teaches Spanish as a second language to monolingual indigenous children, is the only program mentioned that currently uses radio.

Salas populares de lectura (public reading rooms). Located in schools and staffed by teachers who may teach adults to read and write and who may promote cultural activities, these modest libraries usually consist of a few reference books, magazines, and newspapers. In 1978-79 there were 104 libraries.

Telesecundaria. Provides lower secondary education by television to urban or rural students who have not completed lower secondary school. Students are exempt from taking the entrance exam but must meet the other admissions requirements of regular lower secondary schools. The general *secundaria* curriculum is followed (30 hours per week in class, each hour consisting of 20-minute televised lessons and 40-minute follow-ups with a classroom instructor). The transcript awarded upon completion of a *telesecundaria* program is the same as that received by other *secundaria* graduates, except for the designation *telesecundaria*.

Unidades de capacitación para el desarrollo rural (training units for rural development). Founded and supported by the Consejo Nacional de Fomento Educativo (National Council for Educational Promotion) and the "Fredrich Nauman" Foundation of Germany, these training units provide nonformal education in agricultural techniques to 95 rural communities in Coatepec, Veracruz, and Tepalpa, Jalisco.

Chapter Three

Upper Secondary Education

Introduction

Some of the most unusual characteristics of upper secondary education in Mexico are attributable to its close ties to higher education. Despite the current trend toward the establishment of separate institutions of upper secondary education, programs of study are still, for the most part, controlled by institutions of higher education. Like higher education, upper secondary education has developed independently of any overall authority. As a result, programs of study at this level and the institutions which offer them are extremely diverse.

The tendency toward specialization which exists in higher education is also evident at the upper secondary level. Academic upper secondary curriculums usually require an academic concentration, such as physical and mathematical sciences, which leads to particular undergraduate fields of study. Even more significant, there are certain fields of study, such as nursing, preschool and primary education, and social work, which until recently could only be studied at the upper secondary level. The purpose of these programs, like that of many undergraduate programs, is to prepare students for the practice of a vocation or profession.[1] Graduates of these vocational upper secondary programs may be awarded a *título* (vocational qualification) and may register with the Secretaría de Educación Pública/SEP (Ministry of Education) to receive a *cédula* (permit) to practice the vocation.

Because of these similarities, many issues discussed in the introduction to Chapter IV are applicable to some extent at the upper secondary level.

Official Validity and Upper Secondary Education

Unlike primary and lower secondary education, there are no constitutional restrictions placed on upper secondary education, except for those on teacher training. This means that any individual or organization may offer virtually any type of upper secondary program of study. However, as at the higher education level, not all of these programs have official validity or "legal standing." (See Official Validity of Programs, Chapter IV.)

1. In this volume, professions that are studied at the upper secondary level are referred to as vocations to distinguish them from those studied at the higher education level.

All of the upper secondary programs of study offered in public institutions have official validity. On the other hand, private institutions which want official validity for their programs of study must seek it through one of the established channels. Some of the unusual characteristics of institutions of upper secondary and higher education—e.g., the fact that some institutions issue the official transcripts of other institutions—result from the system of official validity. Thus, many of the characteristics of institutions can be discussed within categories according to the source of or lack of official validity for their programs of study. The categories of institutions discussed in the chapter on higher education apply to upper secondary education in great part because so many of the institutions which offer upper secondary education are actually institutions of higher education, and also because the institutions which offer only upper secondary education can also be categorized in this manner.

Categories of Institutions as They Relate to Upper Secondary Education

Each category of public and private institutions is discussed at length in the chapter on higher education. However, in the following section the categories are briefly discussed as they relate to upper secondary education, with particular attention to the source of official transcripts. There are three categories of public institutions: autonomous, state, and federal. There are also three categories of private institutions: those which have been granted *libre* (free or independent status), those with at least some programs that have been incorporated or recognized (and thus have official validity), and those whose programs do not have validity.

Public Autonomous Institutions. The only public autonomous institutions in Mexico are the 32 public autonomous universities, and there are no separate public autonomous institutions which offer only upper secondary education. Most of these tertiary institutions do offer programs of study at the upper secondary level which are designed to prepare students for admission to the undergraduate programs of the sponsoring institutions. In addition, in accordance with the recommendations of the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education), some of these institutions, such as the Universidad Autónoma de Nuevo León/UANL (Autonomous University of Nuevo León), have incorporated vocational training into their programs of study that lead to higher education. Public autonomous institutions also commonly offer upper secondary education which is not designed to lead to higher education in certain vocations such as nursing or social work. In any case, the *certificado de estudios* (transcript) is issued by the institution of higher education, even though the level of education is upper secondary. (See sample documents 2 and 3 in Appendix D.)

Public State Institutions. The category of public state institutions includes institutions of higher education which offer upper secondary education as

well as separate upper secondary institutions. The programs offered by institutions of higher education may prepare students for higher education or for a particular vocation or for both. The *certificado de estudios* is issued by the institution of higher education, not the upper secondary division.

The institutions which offer only upper secondary programs usually offer instruction in only a single field of study. Many of the *escuelas normales* (normal—teacher training—schools) which offer education for preschool and primary school teachers are state institutions. (See teacher training, this chapter). These institutions are by no means limited to vocational programs, and it appears likely that more separate institutions will be founded to offer programs of study which lead to higher education. The *certificado de estudios* may be issued by the institution itself or by the state ministry of education.

Public Institutions Dependent on the Federal Government. Institutions in this category are dependent on the Secretaría de Educación Pública/SEP (Ministry of Education) or on other federal ministries. They reflect the priorities of the federal government for upper secondary education. (See Planning, below.) Although some federal institutions of higher education also offer upper secondary level programs, many federal programs at this level are offered in institutions which offer only upper secondary education. Some of these institutions, such as the Colegio de Bachilleres/CB ("College" of *Bachilleres)* have even been granted the status, *desconcentrada* (deconcentrated), which affords a great deal of independence. Virtually all of the upper secondary programs offered in federal institutions, even those which prepare for higher education, include some kind of vocational training.

In general, the *certificado de estudios* (transcript) of federal upper secondary schools is issued by the federal ministry, such as the SEP, that administers the institution. When the program of study is offered by an institution of higher education, such as the Instituto Politécnico Nacional/IPN (National Polytechnic Institute), the transcript may be issued directly by the institution of higher education. (See sample document 7 in Appendix D.)

Private *Libre* (Free or Independent) Institutions. Only a few private institutions of higher education in Mexico have been granted the status of free or independent, and no institutions which offer only upper secondary education have been granted this status. Of the institutions of higher education in this category, only two offer programs of study at the upper secondary level: the Instituto Tecnológico y de Estudios Superiores de Monterrey/ ITESM (Monterrey Institute of Technology and Higher Studies), which offers vocational programs of study, as well as programs designed to lead to higher education; and the Escuela Libre de Homeopatía de México (Free School of Homeopathy of Mexico), which offers vocational upper secondary programs leading to the qualifications, *enfermero* (nurse), and *partero* (midwife).

All of the programs of study offered by private free or independent institutions have official validity. The institution of higher education which offers the upper secondary program issues the official *certificado de estudios* (transcript).

Private Institutions Whose Programs of Study Have Been Recognized or Incorporated. A wide variety of private institutions offer programs of study at the upper secondary level. This category includes institutions of higher

education as well as institutions which offer only upper secondary level education. Programs of study may prepare for higher education, for a particular vocation, or may combine the two objectives. None of the programs of study offered by these institutions have inherent validity. If validity is needed or desired, it may be acquired for each program of study through *reconocimiento* (recognition) by a federal or state government agency or through *incorporación* (incorporation) by one of the public institutions. (See Official Validity of Programs, Chapter IV.)

A program of study which has been incorporated by a public institution is usually similar to, if not identical to, the same program offered by the public institution. The *certificado de estudios* is issued by the incorporating public institution. (See sample documents 2 and 3.) Many private institutions offer programs of study which have been incorporated by the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico). (See Appendices A and B for a list of institutions with upper secondary programs incorporated into UNAM.)

Recognized programs of study sometimes reflect the policies and priorities of the government agency which grants recognition. The *certificado de estudios* may be issued by the institution which offers the program and bears the signature of an official of the recognizing government agency. In other cases, the transcript may be issued by the federal or state agency.

Private Institutions Whose Programs of Study Do Not Have Official Validity. Finally, there are private institutions whose programs of study have not been recognized or incorporated. Some of these institutions simply do not need official validity because their programs lead neither to higher education nor to registration with the SEP. For example, many commercial or secretarial schools do not have validity for their programs. Caution is advised, however, in dealing with those institutions whose programs would normally be expected to require official validity (see next section). To determine whether an institution's programs have validity, it is necessary to request the final official *certificado de estudios* issued by the incorporating institution or signed by an official of the recognizing government agency (see above).

Significance and Limitations of Validity at the Upper Secondary Level

Rather than reflecting the quality of a program of study, official validity establishes its legal standing in the eyes of the SEP's General Directorate of Professions and of other institutions. Thus, at the upper secondary level, the importance of validity is limited to those programs of study which prepare for higher education and to vocational programs in which graduates are required to register with the SEP and receive the *cédula* (permit) to practice the vocation. (Other aspects of official validity are discussed in Chapters I, IV, and VI.)

Graduates of *bachillerato* programs do not earn a *título* (vocational qualification) or register with the SEP. Even so, private institutions which offer

such programs are likely to seek validity for these programs to ensure their graduates' access to higher education. Public institutions of higher education sometimes offer admissions priority to graduates of programs they have incorporated. (See Chapter IV.)

Graduates of many vocational upper secondary programs, however, do earn a *título*. Graduates of vocational programs with official validity may register with the SEP and receive a *cédula* to practice the vocation. As at the higher education level, there are certain vocations, such as nursing, preschool and primary education, and social work, which require the permit. For other vocations, such as secretarial occupations, the permit to practice the vocation is less necessary.

Private institutions whose programs of study lead neither to higher education nor to registration with the SEP may decide not to seek validity for their programs. Even so, the processes for acquiring validity have shaped upper secondary level curriculums. Its influence makes an understanding of the concept of validity necessary to deal with the wide variety of institutions and programs of study at this level.

Planning

Because of the close ties between upper secondary education and higher education in Mexico, the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education) has addressed many of the problems facing upper secondary education. Some of the recommendations made in meetings of the rectors and directors of member institutions already have begun to influence upper secondary education. The federal Secretaría de Educación Pública/SEP (Ministry of Education) has more directly influenced upper secondary education through the policies and practices instituted in its own upper secondary programs.

Of primary concern is the increasing demand for upper secondary education, especially in states outside the Federal District. Attention was focused on the need for more institutions which offer upper secondary education by ANUIES' 1973 *Study of the Demand for Upper Secondary and Higher Education in Mexico and Proposals for Its Solution*. Another concern is the variety in programs of study. Among *bachillerato* programs (see Programs of Study, this chapter) alone, it is estimated that there are over 500 different curriculums currently in use. This diversity not only inhibits transfer from one upper secondary program to another, but also complicates the process of admission to an undergraduate program at one institution from the upper secondary program of another. (See Chapter IV, Access to Higher Education.) Finally, upper secondary education is faced with meeting the growing need for middle level technicians in a variety of vocational fields.

ANUIES has made several recommendations which would tend to standardize upper secondary programs of study and at the same time increase students' exposure to vocational training. (See Programs of Study, this chap-

ter).[2] Many of the programs offered by SEP institutions reflect ANUIES' basic proposal that upper secondary programs combine the academic courses which permit access to higher education with courses in a vocational specialization. In an effort to reduce upper secondary education's dependence on higher education, which has contributed to the diversity of programs of study, and to increase opportunities for upper secondary education, the SEP has established many institutions, such as the Colegio de Bachilleres/CB ("College" of *Bachilleres)*, which offer only upper secondary education.

In order to facilitate the coordination of upper secondary education, ANUIES has recommended the establishment of statewide commissions to be made up of institutions of higher education as well as institutions which offer only upper secondary education. These commissions would, among other activities, develop a catalog of upper secondary programs available in each state and set minimum curricular standards for programs which lead to higher education.[3] ANUIES has also recommended that additional studies on the demand for upper secondary education in each state be carried out. Such studies might result in the establishment of additional separate state institutions which prepare for higher education, such as those in the CB system.[4]

Programs of Study

Perhaps a wider variety of types of programs of study is offered at the upper secondary level than at any other educational level in Mexico. Traditionally, Mexican upper secondary education has been university preparatory in nature. There have also been technical or vocational programs which were usually quite separate from programs which prepared for higher education and which were limited to certain fields of study, such as nursing or preschool and primary education. Recently, with the development of programs of study which prepare for higher education as well as offer vocational training, the distinction between these two types of programs has become less clear.

In fact, ANUIES' efforts have concentrated on standardizing education at this level as much as possible. It has recommended that programs of study educate students in the sciences and humanities as well as in vocational skills. The academic courses would include a core of required courses in language, mathematics, natural sciences, historic and social sciences, and humanities, as well as a group of elective courses which relate to a particular academic specialization. These programs would be organized in terms of semesters and would utilize a system in which 2 credits represent every semester hour of academic or theoretical coursework and 1 credit represents every semester hour of practical or laboratory coursework. (See Chapter IV,

2. Asociación Nacional de Facultades y Escuelas de Ingeniería, "Acuerdos y Declaraciones de la Asociación Nacional de Universidades e Institutos de Enseñanza Superior-Villahermosa, Toluca, Tepic, Veracruz, Querétaro" (hereafter cited as "Acuerdos y Declaraciones"), p. 15. (xerox)

3. *Ibid.*, p. 17.

4. *Ibid.*, p. 29.

Undergraduate Programs of Study, for information on the credit system.) According to ANUIES, programs of study should be three years in duration and include from 180 to 300 total credits, not including credits earned for courses in the vocational specialization.[5]

Despite the implementation of some or all of these recommendations by at least a few institutions in every category, there still exist three basic types of upper secondary programs: those which prepare for higher education, those which offer vocational training, and those which combine the two objectives. As institutions develop their programs of study, they often devise their own designations for their programs and the level at which they are offered. Thus, while the purpose of a given program of study is clear to the institution that offers it, this purpose may not be as clear to the outside observer. There are, however, a few characteristics which help identify the type of program in question.

The designation for the level at which a program is offered sometimes provides insight as to its type. Although the following terms all imply upper secondary level programs, *nivel medio superior* or *ciclo medio superior* (upper middle level/cycle) usually refers to studies which lead to higher education. On the other hand, the terms *nivel medio profesional* (professional middle level), *nivel medio técnico* (technical middle level), *nivel medio terminal* (terminal middle level), and *nivel técnico auxiliar* (assistant technician level) are most often used in conjunction with upper secondary level programs which are not designed to lead to higher education.[6]

The designation for the program itself is also significant. Programs designated as *bachillerato* or *preparatoria* (preparatory) are always upper secondary programs which lead to higher education. Variations of these terms have been used in conjunction with programs which offer vocational training in addition to preparation for students entering institutions of higher education. Such programs may be referred to as *bachillerato técnico* (technical *bachillerato)* or *preparatoria técnica* (technical preparatory). Vocational programs which are not designed to lead to higher education are often referred to as *técnico* programs. They may also be identified by the name of the vocation for which they prepare, for example, *enfermería* (nursing) and *trabajo social* (social work).

Following this introductory section, upper secondary programs of study and the institutions that offer them are discussed in greater detail in the context of three areas of education: general academic, technical or vocational, and teacher training. In each of these sections, programs are discussed in terms of the preceding characteristics in order to clarify what a given program is designed to do by the institution that offers it. It must be understood, however, that a program's "purpose" does not exclude other options. Nor do programs of a particular "type" always have similar curricular characteristics. For example, the line separating programs which prepare for admission to higher education and those which prepare primarily for employment is not impassable. Although additional upper secondary courses are

5. *Ibid.*, p. 15.

6. *Nivel medio terminal* can also refer to lower secondary education.

usually required, students graduating from programs designed to lead to employment in a particular vocation may sometimes be admitted to certain undergraduate fields of study. (See Chapter IV, Access to Higher Education.) Also, since all types of programs of study vary in terms of curriculum, some programs which are not designed to lead to higher education may occasionally include as many "academic" courses as other programs which are designed to lead to higher education. (See Chapter VI, Evaluation of Vocational Upper Secondary Curriculums.)

Certificates and Qualifications

Many different kinds of certificates and qualifications are granted at the upper secondary level. The differences among them generally reflect the three objectives of upper secondary education: to lead to higher education, to prepare for a particular vocation, or to do both. Actual completion of any upper secondary program, however, is generally indicated on the *certificado de estudios* (transcript).

Graduates of vocational programs which do not generally lead to higher education may also receive a vocational qualification which may be an actual *título* or simply a diploma. A common vocational qualification is that of *técnico* (technician) in a given specialization, for example, *técnico en electricidad* (technician in electricity) or *técnico en turismo* (technician in tourism). Other vocational qualifications take their names directly from the field of study, for example, *enfermero* (nurse), *profesor de educación primaria* (primary teacher), *secretaria* (secretary) and *trabajador social* (social worker). While completion of the program of study is usually indicated on the *certificado de estudios*, in some cases additional requirements beyond completion of the coursework, such as a thesis and/or a period of social service, may be required for actual graduation. In such cases, a separate vocational qualification would be awarded in addition to the *certificado de estudios*.

General academic programs of study, on the other hand, usually require only the completion of the coursework to graduate. Although some institutions do award a separate *bachillerato* diploma, completion of the *bachillerato* program, usually in a particular academic specialization, is most commonly indicated only on the *certificado de estudios* (transcript). The graduate of a *bachillerato* program is referred to as a *bachiller*.

Clear-cut patterns for awarding diplomas have not yet been established among programs which combine academic courses with courses in a vocational specialization. In most cases, completion of both facets of the curriculum is indicated on the *certificado de estudios*. Completion of the *bachillerato* and the vocational specialization may be designated separately on the transcript. Thus, the transcript may indicate, for example, that the courses that qualify the student as a *profesor de educación pre-escolar* (preschool teacher) and a *bachiller* have been taken and passed. (See sample document 8 in Appendix D.) In other cases, the two facets of the program are linked in a single designation, such as *bachillerato agrícola* (agricultural

bachillerato), bachillerato de arte (bachillerato in art) or *bachillerato técnico en biblioteconomía* (technical *bachillerato* in library science). (See sample document 4.) The transcript may also be accompanied by a separate qualification in the vocational field of study.

Access to Upper Secondary Education

Admission to programs of study at the upper secondary level generally requires the completion of *secundaria*. Some programs also require an entrance examination. Programs in certain vocational specializations, especially in fine arts, continue to the upper secondary level without formal completion of a *secundaria* program. (For an example, see Escuela Nacional de Danza Clásica, this chapter.)

Unless otherwise indicated, the programs of study discussed in the following sections require the completion of *secundaria* for admission. According to the 1979 presidential *Informe (Report)*, almost all students who graduate from *secundaria* do continue their studies at the upper secondary level, most of them in general or vocational programs designed to lead to higher education. Approximately 14% of the 1978 *secundaria* graduates enrolled in a teacher training program at the upper secondary level. It is estimated that only 8.6% of the 1978 *secundaria* graduates enrolled in a technical or vocational program which was not designed to lead to higher education.[7]

While admission to upper secondary education in general is not highly selective, admission to certain institutions may be more difficult than to others. Because of overcrowding at the undergraduate level of these institutions, some have developed admissions policies that give preference to graduates of their own upper secondary programs. As a result, some institutions may have more applicants than they can accept, while institutions which offer only upper secondary education, such as the Colegio de Bachilleres/CB ("College" of *Bachilleres)*, may suffer in popularity because graduates are less sure of gaining admission to their first choice of institution of higher education.

Nonformal Education

The only nonformal education available at the upper secondary level is through the system of *educación abierta* (open education—also described in Chapter IV under the heading, Nonformal Education). Through open education, students can complete entire upper secondary programs of study by guided self-study and credit by examination. Open *bachillerato* programs have been established by the SEP as well as by individual institutions such as the Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies) and the Centro de Enseñanza Técnica y Superior/CETYS (Center of Technical and Higher Education).

7. *Tercer Informe de Gobierno, Sector Educativo, 1979*, pp. 37, 40, 48.

Grading

In general, the same grading scales and policies are used for secondary education as for higher education (see Grading, Chapter IV). While the kinds of grading scales are basically the same, individual institutions may use a different scale at the upper secondary level than at the undergraduate level. For example, an institution that uses one of the descriptive grading systems at the undergraduate level may use a numerical scale at the upper secondary level. The grading scale is usually shown on the transcript.

General Academic Upper Secondary Programs of Study

Overview

General academic upper secondary programs of study, usually referred to as *bachillerato* or *preparatoria* (preparatory) programs, are those which are designed to lead to higher education and which do not include courses in a vocational specialization. Since most of these programs of study were designed by institutions of higher education to prepare students for their own undergraduate programs, a number of curriculums have emerged.

Once part of a five-year university preparatory program from which the three-year *secundaria* cycle was separated in 1926, *preparatoria* programs were until recently usually two years in duration. Within the last 20 years, however, most institutions have lengthened their programs to three years, at least in part to reduce enrollment pressures at the undergraduate level.[8] Some programs, particularly those in northern states, have continued to be two years in duration.

Programs of either length may include from 30 to 48 semester-long courses. Some two-year programs include as many or more semester-long courses than certain three-year programs. Programs of study usually include a comparable number of credits as well ("credit" refers to the ANUIES system explained in Chapter IV). For example, the 2-year *preparatoria* program of the Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies) includes approximately 220 credits. On the other hand, the 3-year *preparatoria* program of the Colegio de Ciencias y Humanidades/CCH ("College" of Sciences and Humanities) of the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico) includes only 216 credits.

Designations for various *bachillerato* programs are not always applied in the same way. For example, at some institutions *bachillerato único* (singular *bachillerato)* refers to a general *bachillerato* program which does not offer any specific academic concentrations in its curriculum. At other institutions it may refer to a six-year program which encompasses the three-year *secundaria* program. Even though the first three years constitute the general *secundaria* program of study, the three years of upper secondary education are

8. Gill, p. 51.

designated as the fourth, fifth and sixth years of the *bachillerato* program.

With a few exceptions, such as the *bachillerato* program of CCH and the *bachillerato único* program of the Universidad Autónoma de Nuevo León/ UANL (Autonomous University of Nuevo León), most *bachillerato* programs require students to specialize in a particular academic area. This concentration determines to some extent the undergraduate fields of study that a student may enter. Although the designations used to represent a concentration vary from institution to institution, six basic areas of concentrations are generally available: *bellas artes* (fine arts), *ciencias económico-administrativas* (economic and administrative sciences), *ciencias físico-matemáticas* (physical and mathematical sciences), *ciencias químico-biológicas* (chemical and biological sciences), *ciencias sociales* (social sciences), and *humanidades* (humanities).

Within a given institution, there may actually be very little difference among the programs of study in the various academic concentrations offered. The programs of study at most institutions include a *tronco común* (common core) of courses which are the same for all the concentrations. This common core often includes all but a few of the courses that constitute the program of study. In any case, when a student completes a *bachillerato* program, the final *certificado de estudios* (transcript) indicates the student's area of concentration.

Bachillerato Programs of Selected Institutions

Institutions in each of the categories discussed earlier in this chapter, except for those dependent on the federal government, offer general academic *bachillerato* or *preparatoria* programs. No federal institutions are included in this section, since virtually all federal programs include vocational training. In addition to the public autonomous, public state, private free or independent, and other private institutions of higher education which offer *bachillerato* programs, there are also many private institutions which offer only upper secondary education. To increase access to higher education for their graduates, most of these private institutions choose to incorporate their *bachillerato* programs into public institutions of higher education. Many private institutions which offer only upper secondary education, as well as many institutions of higher education, have incorporated their *bachillerato* programs into UNAM. (See Appendix A.)

There are also many separate upper secondary institutions in Mexico operated by foreign communities or governments. While their programs of study, which lead to foreign certificates such as a U.S. high school diploma, may not have official validity in Mexico, most also offer a *bachillerato* program which has been incorporated by a Mexican institution of higher education to ensure access to higher education in Mexico for their graduates.

In the following sections, the *bachillerato* programs of selected institutions are discussed in greater detail.

Universidad Nacional Autónoma de México/UNAM
(National Autonomous University of Mexico)

UNAM, a public autonomous institution, offers two different *bachillerato* programs, one in the Escuela Nacional Preparatoria/ENP (National Preparatory School) and the other in the Colegio de Ciencias y Humanidades/CCH ("College" of Sciences and Humanities). There are nine different *planteles* (branches) of the ENP in Mexico City with a total enrollment in 1979-80 of 48,909. CCH, which operates at five different locations, had a total enrollment of 93,155 in 1979-80. In addition, one or both of these programs of study is in use in each of the 210 institutions whose *bachillerato* programs are incorporated into UNAM. (See Appendix A.)

UNAM's academic calendar includes approximately 32 weeks of class and an examination period. While ENP offers year-long courses, CCH operates on a semester system. Both use a system of credits based on the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework).

The basic difference between the two *bachillerato* programs is that the ENP programs require an academic concentration, while the CCH program is interdisciplinary. Another difference is that the ENP program is referred to as a 6-year *bachillerato único* (singular *bachillerato)* program. (The two definitions of *bachillerato único* are explained in the previous section of this chapter.) Although the first three years of the program consist of the usual general *secundaria* curriculum, the three years of the program which are actually at the upper secondary level are designated as the fourth, fifth, and sixth years of the *bachillerato* program. The 3-year upper secondary portion includes a total of 24 courses, 8 each year. The program requires from 288 to 316 total credits, depending on the area of concentration.

At ENP there are common courses throughout the fourth and fifth years and some in the sixth year. The last year also requires students to select at least three courses in one of the following areas of concentration: *bellas artes* (fine arts), *ciencias físico-matemáticas* (physical and mathematical sciences), *ciencias químico-biológicas* (chemical and biological sciences), *disciplinas económico-administrativas* (economic and administrative disciplines), *disciplinas sociales* (social disciplines), or *humanidades clásicas* (classical humanities). Some of the courses in the area of concentration are electives. (See Table 2.) Even though the name, ENP, does not appear on the *certificado de estudios* (transcript), the fact that an area of concentration is specified indicates that the program of study is that of the ENP. (See sample document 2 in Appendix D.)

Table 2

Fourth, Fifth, and Sixth Years of the Six-Year *Bachillerato* Program at ENP[a]

Required Courses			
Fourth Year	Credits	Fifth Year	Credits
Art	8	Anatomy, Physiology, Hygiene	12
Foreign Language	12	Biology	16
Geography	12	Chemistry	16
Logic	12	Ethics	8
Mathematics I	12	Foreign Language	12
Physics	16	Greco-Latin Etymology	8
Spanish Language and Literature	12	Mathematics II	12
		Mexican History	12

(continued)

Sixth Year

Foreign Language	12	Psychology	12
Mexican and Latin American Literature	12	World Literature	8
Mexican Law	8		

The last year also requires at least three courses selected from one of the six areas of concentration listed below:

Ciencias Físico-Matemáticas (Physical and Mathematical Sciences)		*Ciencias Químico-Biológicas* (Chemical and Biological Sciences)	
Drafting	12	Biology	16
Mathematics	12	Chemistry	16
Physics	16	Mathematics	12
Elective	–	Physics	16
		Elective	–
Disciplinas Económico-Administrativas (Economic and Administrative Disciplines)		*Disciplinas Sociales* (Social Disciplines)	
Economic Geography	12	History of Culture	12
Mathematics	12	History of Philosophy	12
Sociology	12	Sociology	12
Elective	–	Elective	–
Humanidades Clásicas (Classical Humanities)		*Bellas Artes* (Fine Arts)	
Esthetics	8	Esthetics	8
Greek	12	History of Art	12
History of Philosophy	12	Two Electives	–
Latin	12		
Elective	–		

*Escuela Nacional Preparatoria/ENP (National Preparatory School).

NOTE: The first three years of the program consist of the usual general *secundaria* curriculum.

SOURCE: *Planes de Estudio, Universidad Nacional Autónoma de México 1980*, Dirección General de Publicaciones (México, D.F.).

UNAM's CCH offers an interdisciplinary program of study in which the 6-semester program is comprised of a total of 26 to 30 semester-long courses, with from three to five courses each semester. The program includes 216 credits, and the first four semesters are composed entirely of required courses. During the last two semesters, students select courses from one of five different groups of elective courses but none of the groups constitutes a particular academic concentration. (See Table 3.) Graduation from CCH requires an examination in English in addition to completion of the program of study. The designation of CCH on the *certificado de estudios*, as well as the fact that no concentration is mentioned, distinguishes this program from that of ENP. (See sample document 3 in Appendix D.)

Table 3

Bachillerato Program, Colegio de Ciencias y Humanidades/CCH ("College" of Sciences and Humanities), UNAM

First Semester	Credits	Second Semester	Credits
Classical Literature	4	Chemistry I	10
Composition I	6	Composition II	6
Mathematics I	8	Mathematics II	8
Modern World History	6	Mexican History I	6
Physics I	10	Spanish Classical Literature	4
Third Semester	**Credits**	**Fourth Semester**	**Credits**
Biology I	10	Composition & Research Documentation II	6
Composition & Research Documentation I	6	Experimental Methods	10
Mathematics III	8	Theory of History	6
Mexican History II	6	Mathematics IV	8
Modern World Literature	4	Modern Spanish & Latin American Literature	4
Groups of Elective Courses			
Fifth Semester		**Sixth Semester**	
	Group "a"		
Logic I	8	Logic II	8
Mathematics V	8	Mathematics VI	8
Statistics I	8	Statistics II	8
	Group "b"		
Biology II	10	Biology III	10
Chemistry II	10	Chemistry III	10
Physics II	10	Physics III	10
	Group "c"		
Esthetics I	6	Esthetics II	6
Ethics & Knowledge of Man I	6	Ethics & Knowledge of Man II	6
Philosophy I	6	Philosophy II	6
	Group "d"		
Administration I	6	Administration II	6
Economics I	6	Economics II	6
Geography I	6	Geography II	6
Greek I	6	Greek II	6
Latin I	6	Latin II	6
Law I	6	Law II	6
Political & Social Sciences I	6	Political & Social Sciences II	6
Psychology I	6	Psychology II	6
	Group "e"		
Communication Science I	4	Communication Science II	4
Cybernetics & Computation I	4	Cybernetics & Computation II	4
Environmental Design I	4	Environmental Design II	4
Graphic Expression I	4	Graphic Expression II	4
Health Sciences I	4	Health Sciences II	4

Source: *Planes de Estudio, Universidad Nacional Autónoma de México 1980*, Dirección General de Publicaciones (México, D.F.).

Centro de Enseñanza Técnica y Superior/CETYS
(Center of Technical and Higher Education)

CETYS is a private institution of higher education whose programs of study are recognized by the Secretaría de Educación Pública/SEP (Ministry of Education). CETYS operates *escuelas preparatorias* (preparatory schools) in three cities in the state of Baja California: Ensenada, Mexicali, and Tijuana. (See the description of CETYS in Chapter IV.)

At CETYS, the school year is divided into two semesters, each of which includes 16 weeks of class and a two-week examination period. A system of credits is used based on the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework).

Five different *bachillerato* programs are offered. Four are specialized in one of the following academic areas: *ciencias contables administrativas* (accounting and administrative sciences), *ciencias físico-matemáticas* (physical and mathematical sciences), *ciencias químico-biológicas* (chemical and biological sciences), and *humanidades* (humanities). The fifth program is the *bachillerato único* (also referred to as the *bachillerato general*), which does not offer any specific academic concentrations in its curriculum.

Each program is four semesters in duration and includes approximately 252 total credits or from 132 to 144 semester hours. Students generally take twelve courses each semester. The differences among the five programs of study are fairly slight. All of the courses in the first two semesters, 80% of the courses in the third semester, and 56% of the courses in the fourth semester are the same for all five programs of study.

Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM
(Monterrey Institute of Technology and Higher Studies)

ITESM is a private institution of higher education which has been granted the status of *libre* (free or independent) by presidential decree. ITESM *bachillerato* programs are offered in several *escuelas preparatorias* (preparatory schools). Some of these schools are located in Monterrey, Nuevo León, and others are affiliated with ITESM units outside Monterrey. (See Chapter IV for a description of the various units of ITESM.)

The school year at ITESM is divided into two semesters of approximately four or four and one-half months each. A system of credits is used and, in accordance with the ANUIES guidelines, every semester hour of academic or theoretical coursework is worth 2 credits, and every semester hour of practical or laboratory coursework is worth 1 credit. However, in this case a credit is referred to as an *unidad* (unit).

The same entrance examination required for admission to ITESM undergraduate programs of study, the Prueba de Aptitud Académica/PAA[9] is required for admission to its *bachillerato* programs. Although the specific results required vary from year to year, somewhat lower PAA scores are accepted for admission to *bachillerato* programs than for admission to undergraduate programs. The admissions decision also depends on a student's grades in *secundaria*. One official of ITESM reports that between 8% and 12% of the applicants to ITESM *bachillerato* programs are rejected each year.

Three different *bachillerato* concentrations are offered: *ciencias administrativas* (administrative sciences), *ciencias físico-matemáticas* (physical and mathematical

9. This refers to the Scholastic Aptitude Test of the College Entrance Examination Board (CEEB), offered in Spanish.

sciences) and *humanidades* (humanities). Each program, which is four semesters in duration, is comprised of approximately 110 semester hours or 220 units. Students generally take seven or eight courses each semester. The first two semesters of each program consist of a core of courses common to all three concentrations. The last two semesters include courses in the area of concentration. (See Table 4.) ITESM also offers programs of study which combine one of these academic concentrations with courses in different vocational specializations. (The ITESM vocational programs are discussed later in this chapter.)

Universidad Autónoma de Guadalajara/UAG
(Autonomous University of Guadalajara)

UAG is a private institution of higher education whose programs of study are incorporated into those of UNAM. UAG operates three preparatory schools: the Escuela Preparatoria Femenil (Preparatory School for Girls), Escuela Preparatoria Nocturna *(mixta)* (Evening Preparatory School for Girls and Boys), and the Escuela Preparatoria Varonil (Preparatory School for Boys). The 1979 enrollment at these three schools was 1,015, 476, and 927, respectively.

Table 4

Three *Bachillerato* Programs, Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies)

Tronco Común (Common Core of Courses)

First Semester	Sem. Hrs.	Second Semester	Sem. Hrs.
Composition I	3	Biology	4
English I	5	Composition II	3
Esthetic Appreciation	3	English II	5
Intermediate Mathematics I	5	Intermediate Mathematics II	5
Learning Methodology	2	Modern Western History	3
Philosophy I	5	Philosophy II	4
Reading Methodology	4	Vocational Orientation	1
		World Literature I	4

Areas of Concentration

Humanidades (Humanities)

Third Semester	Sem. Hrs.	Fourth Semester	Sem. Hrs.
English III	5	Bioethics	3
Introduction to Chemistry	5	English IV	5
Literary Composition	4	Intro. to Literary Theory	3
Modern World History	3	Introduction to Physics	5
Philosophic Logic	3	Modern Mexican History	4
Political Texts & Problems I	3	Political Texts & Problems II	4
World Literature II	4	Spanish American History & Literature	3
		Total:	110

(continued)

Ciencias Físico-Matemáticas (Physical & Mathematical Sciences)

Third Semester	Sem. Hrs.	Fourth Semester	Sem. Hrs.
Chemistry I	3	Bioethics	3
English III	5	Chemistry II	3
Intermediate Mathematics III	5	Chemistry Laboratory II	2
Modern World History	3	English Literature IV	5
Physics I	5	Intermediate Mathematics IV	5
Physics Laboratory I	1.5	Modern Mexican History	4
Political Texts & Problems I	3	Physics II	5
World Literature II	4	Physics Laboratory II	1.5
		Total:	114

Ciencias Administrativas (Administrative Sciences)

Third Semester	Sem. Hrs.	Fourth Semester	Sem. Hrs.
English III	5	Bioethics	3
Intermediate Mathematics III	5	English IV	5
Introduction to Chemistry	5	Intermediate Mathematics IV	5
Modern World History	3	Introduction to Physics	5
Philosophic Logic	3	Modern Mexican History	4
Political Texts & Problems I	3	Political Texts & Problems II	4
World Literature II	4		
		Total:	110

SOURCE: Curriculums from ITESM. (mimeographed)

The UAG *bachillerato* program is incorporated into UNAM's Colegio de Ciencias y Humanidades/CCH ("College" of Sciences and Humanities). This means that the program of study used is essentially the same as the one described in the section on UNAM. The official *certificado de estudios*, which refers to the CCH *bachillerato* program and to the school of the UAG in which it is offered, is issued by UNAM. (See sample document 3 in Appendix D.)

Universidad Autónoma de Nuevo León/UANL
(Autonomous University of Nuevo León)

UANL's general academic upper secondary programs are offered in 23 *escuelas preparatorias* (preparatory schools), each of which is known by a number from 1 to 23. Although almost all UANL undergraduate divisions are located in Monterrey, Nuevo León, several of the preparatory schools are located in other cities in the state of Nuevo León. Preparatory school Number 3 is specifically designated Nocturna para Trabajadores (Night School for Workers). A few preparatory schools, including Number 3, offer the academic upper secondary curriculum in *sistema abierta* (open system) in addition to the regular programs of study. In 1979, the total enrollment in all UANL preparatory schools was 27,093.

The *bachillerato* program is organized on the basis of semesters, each of which is approximately 18 weeks in length. The 4-semester program of study includes approximately 30 semester-long courses or six to eight courses each semester. The complete program includes approximately 124 semester hours.

Table 5

Bachillerato Unico Program, Universidad Autónoma de Nuevo León/UANL (Autonomous University of Nuevo León)

First Semester	Sem. Hrs.	Second Semester	Sem. Hrs.
Biology I	3	Biology II	3
Composition Workshop I	5	Composition Workshop II	5
English I	3	Economic & Social Problems of the World	3
Introduction to Experimental Sciences I	5	English II	3
Literature Workshop I	3	Introduction to Experimental Sciences II	5
Mathematics I	5	Literature Workshop II	3
Philosophical Problems I	3	Mathematics II	5
Theory of History	3	Philosophical Problems II	3

Third Semester	Sem. Hrs.	Fourth Semester	Sem. Hrs.
Biology III	3	Ethical & Moral Problems	3
Composition Workshop III	5	Science Methodology	4
Economic & Social Problems of Mexico I	3	Economic & Social Problems of Mexico II	3
General Chemistry	5	Plus, three courses selected from among the following electives: Accounting Science; Anatomy; Drafting; Economics; English; General Physiology; Introduction to Psychology; Law; Mathematics; Organic Chemistry; Physics	
Literature Workshop III	3		
Mathematics III	5		
Physics I	5		

SOURCE: *Carreras que imparte la U.A.N.L. y Planes de Estudio*, Universidad Autónoma de Nuevo León, Departamento Escolar y de Archivo (Monterrey: Imprenta Universitaria, 1980).

The program of study is termed *bachillerato único* because there is no concentration in a particular academic area. (See the previous section for a discussion of the *bachillerato único*.) All of the courses in the first three semesters and three of the courses in the fourth semester are required of all students. Three elective courses are also required during the fourth semester. (See Table 5.)

UNIVERSIDAD LA SALLE, A.C.
(La Salle University)

La Salle University is a private institution whose programs of study are incorporated into those of UNAM. Its *escuela preparatoria* (preparatory school), which is only for boys, follows the program of study of UNAM's Escuela Nacional Preparatoria/ENP (National Preparatory School). Rather than offering ENP's six areas of concentration, the preparatory school of La Salle University offers a *bachillerato* program in only four areas: *ciencias físico-matemáticas* (physical and mathematical sciences), *ciencias químico-biológicas* (chemical and biological sciences), *disciplinas económico-administrativas* (economic and administrative disciplines), and *disciplinas sociales* (social disciplines).

Vocational Upper Secondary Programs of Study

Overview

There are two types of vocational upper secondary programs of study: programs which prepare students for higher education as well as offering vocational training, and those which primarily prepare students to practice a vocation and do not normally lead to higher education. Since individual institutions and government agencies design their own programs of study, characteristics of vocational upper secondary programs vary widely, and it may not always be possible for the outside observer to distinguish between the two types of programs. However, certain generalizations can be made about each type of curriculum.

Upper secondary programs which prepare students for higher education and also offer vocational training are offered at what is termed the *nivel medio superior* (upper middle level). Although this designation is sometimes used in reference to programs which do not lead to higher education, it is most often used in conjunction with programs which do lead to higher education. Such programs are usually referred to as *bachillerato* or *preparatoria* programs, although reference to a vocational specialization is also often included in the designation for the program, as in *bachillerato técnico* (technical *bachillerato)* or *preparatoria técnica* (technical preparatory).

These programs are now usually three years in duration. Until recently, many of them consisted of two and, later, three years of academic courses followed by one or two optional additional years of upper secondary level courses in a vocational specialization. Thus, they varied in length from two to four years. Because the additional one or two years of vocational courses proved unpopular, most programs have integrated the academic and technical courses into a three-year program.

Since 20% to 50% of these programs are devoted to courses in a vocational specialization, they usually include more courses than general *bachillerato* programs. Most of the programs are comprised of at least 150 and often as many as 250 total semester hours, while general *bachillerato* programs average 130 semester hours. The *bachillerato técnico* or *preparatoria técnica* programs which use the system of credits recommended by ANUIES include from 250 to 360 total credits, often more than are included in general *bachillerato* programs.

Vocational programs which are not designed to lead to higher education are usually referred to as *técnico* (technician) programs and are offered at what is termed the *nivel medio profesional* (professional middle level), *nivel medio técnico* (technical middle level) or *nivel medio terminal* (terminal middle level). These programs generally lead to a qualification in the vocational field of study.[10] Vocational qualifications awarded include *técnico* (tech-

10. In the following sections, programs which lead only to a vocational qualification are not designed to lead to higher education.

nician), *técnico profesional* (professional technician), and *profesional técnico* (technical professional) in a particular field of study. Other qualifications reflect the vocations for which the programs prepare students—for example, *enfermero* (nurse), *partero* (midwife), and *trabajador social* (social work). (See the section on Certificates and Qualifications in the Introduction to this chapter.)

Although vocational upper secondary programs range in length from one to four years, they are usually three-year programs of study, generally comprised of at least 150 semester hours. The programs which use a credit system in accordance with the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework) often include from 265 to 472 total credits. At least 50%, more often 70%, of the curriculum is devoted to courses in the vocational specialization.

In the following pages, vocational programs offered at specific institutions are described according to whether they are designed to lead to higher education or to prepare students for a vocation. However, the differences between these two types of programs may not always appear significant to the U.S. admissions officer. Upon closer analysis and comparison, it can be demonstrated that programs which are not designed to lead to higher education sometimes include a higher percentage of academic courses than programs which lead to higher education. (For a comparison of vocational upper secondary programs, see Evaluation of Vocational Programs, Chapter VI.)

Types of Institutions Offering Vocational Upper Secondary Education

Institutions in every category offer vocational upper secondary programs of study. (See Categories of Upper Secondary Institutions, earlier in this chapter.) Public autonomous, public state, private free or independent, and other private institutions have tended to focus on vocational programs which are not designed to lead to higher education and which are limited to a few fields of study, such as nursing, secretarial skills, and social work. Private and state institutions which offer only upper secondary education often concentrate on a single field of study. When the field of study is one in which official validity is needed, the private institutions may have the program incorporated or recognized. (See Appendix B for a list of private upper secondary nursing schools with programs of study incorporated by UNAM.)

The federal government as represented by the Secretaría de Educación Pública/SEP (Ministry of Education) has been extremely interested in expanding vocational education at the upper secondary level. Not only has it widened the range of fields of study offered at this level, but it has also been the forerunner in establishing vocational programs which lead to higher education. Some of the federal programs are offered in institutions of higher education or in institutions affiliated with institutions of higher education.

Most, however, are offered in institutions which offer only upper secondary education.

Because the federal government has developed a cohesive group of vocational upper secondary programs of study and because its programs have served as models for those developed in other types of institutions, the following section is divided into two parts: institutions dependent on the federal government and institutions in other categories, including public autonomous, public state, private free or independent, and other private institutions.

Institutions Dependent on the Federal Government

Many different fields of study are offered in the federal system, including agriculture, art, commerce, fishing, library science, ocean science, and various industrial and service fields. Special attention has been given to fields of study which were not already available in institutions in other categories, such as fishing and ocean sciences. Most institutions offer vocational specializations in a single field of study; the specific specializations offered vary with regional needs. Vocational programs designed to lead to higher education and programs that normally do not lead to higher education are both offered, sometimes in the same vocational specialization and in the same institutions. In the federal system, however, most institutions offer only one of these types of programs.

Most federal institutions are dependent on the SEP. However, there is a small group of institutions dependent on the Secretaría de la Defensa Nacional/SDN (Ministry of National Defense), and on other ministries.

INSTITUTIONS DEPENDENT ON THE SEP

Miscellaneous Institutions

Centro Regional de Enseñanza Técnica Industrial/CeRETI
(Regional Center of Technical Industrial Education)

There are two CeRETIs: the CeRETI del Soconusco, located in Tapachula, Chiapas, and the CeRETI de Guadalajara, located in Guadalajara, Jalisco. Although dependent on the SEP, they are linked administratively to the Centro Nacional de Enseñanza Técnica Industrial/CeNETI (National Center of Technical Industrial Education). While the CeRETIs offer a few undergraduate programs (see the description of the CeRETIs in Chapter IV), their main emphasis is on upper secondary education. In 1979-80, 1,300 of 1,600 students were enrolled at the upper secondary level.

CeRETI upper secondary programs that lead to higher education offer vocational education in industrial specializations, such as automobile mechanics and electricity. Further information on their programs of study is unavailable; however, they are sometimes linked with the Centros de Estudios Científicos y Tecnológicos/CECYT (Centers of Scientific and Technological Studies) in SEP publications. (See the description of the CECYT later in this chapter.)

Colegio de Bachilleres/CB
("College" of *Bachilleres*)

CB, whose name comes from the designation for a student who has completed a *bachillerato* program (discussed earlier in this chapter), is a system of federal institutions which offer only upper secondary education. The administration of the CB system is unique among Mexican federal upper secondary institutions. Established by presidential decree, it is not and has never been affiliated with an institution of higher education. Like certain federal institutions of higher education, it has been granted the status, *desconcentrada* (deconcentrated), which allows it a great deal of administrative autonomy. There are now CBs operating in several locations in the states as well as in the Federal District.

Unlike some of the other federal upper secondary institutions, the CB does not emphasize any particular vocational specialization. Instead, its programs of study combine a *bachillerato* curriculum which prepares for higher education with a variety of vocational specializations, such as *biblioteconomía* (library science), *empresas turísticas* (tourist enterprises), and *laboratorista químico* (chemical laboratory technician). (See Table 6 for the CB program in library science.)

The program of study at CB is six semesters in duration, and students generally take six to nine courses each semester. The first four semesters constitute a common core of basic academic subjects and a few technical subjects. During the last two semesters, students are allowed certain academic electives and are required to take courses in a particular vocational specialization. The program consists of 154 semester hours or 308 total credits, of which approximately 80% are devoted to basic academic subjects. The credit system used is based on the ANUIES guidelines—2 credits for each semester hour of academic or theoretical coursework, and 1 credit for each semester hour of practical or laboratory coursework.

Colegio Nacional de Educación Profesional Técnica/CONALEP
(National "College" of Technical Professional Education)

Established by presidential decree in 1978, the CONALEP system already includes 62 different institutions located throughout Mexico. Although still under the jurisdiction of the SEP, the CONALEP system has been granted the status of *descentralizada* (decentralized), which affords a great deal of independence. Since CONALEP's programs of study prepare students to practice a particular vocation rather than for higher education, CONALEP officials feel that this independence is necessary to facilitate adjustment of the curriculum in accordance with the needs of local businesses and industry.

Vocational specializations offered range from agriculture and fishing to industry and commerce, duplicating somewhat the fields of study offered separately in the SEP's system of technical institutions (discussed below). The programs of study, which lead to the qualification *profesional técnico* in one of the vocational specializations offered, are two and one-half to three years in length. Classes are held year-round with vacations in December and April. The year is divided into two semesters of approximately five months each.

To help ensure that programs of study respond to local needs, members of the business and industrial community participate as teachers and governing board members of each CONALEP. Although curriculums vary, programs of study generally include 40 semester-long courses, most of which relate closely to the vocational specialization. Approximately 60% of each program is spent in practical activities in the workshop, in the laboratory, and in the appropriate business or industry. (See Table 7 for the program in electricity.) Graduation requires a period of social service, as well as a thesis and its defense in an oral examination.

Table 6

Upper Secondary Programs in *Biblioteconomía* (Library Science), *ENBA*, *CB*, and *UG*

	ENBA *Bachillerato Técnico en Biblioteconomía* (technical *Bachillerato* in library science)	CB *Bachillerato* (with library science training)	UG *Bachillerato Unitario con Adiestramiento en Biblioteconomía* (*Bachillerato* with training in library science)
Basic Academic Courses			
Accounting	8	–	–
Administration	3	..	–
Biology	4	8	9
Business Mathematics	6	–	–
Chemistry	–	12	9
Composition & Literature	12	14	12
Earth Sciences	–	4	–
Ecology	–	4	–
Economics	8	–	3
Foreign Language	8	8	6
History	4	6	9
Human Relations	2	3	–
Law	8	–	–
Logic	–	–	3
Mathematics	12	12	12
Philosophy	8	6	9
Physics	–	12	9
Psychology	4	–	3
Scientific Methodology	–	6	3
Social Sciences	–	6	3
Socioeconomic Problems of Mexico	4	6	3
Statistics	4	–	–
Electives	–	9	–
Vocational Courses:			
Acquisition of Materials	6	–	–
Cataloging	18	8	12
Extracurricular Activities	4	–	–
Information Science	4	3	2
Labor Legislation & Social Security	–	3	2
Library Science	12	9	14
Office Management	16	–	24

Periodicals	6	–	–
User Services	12	6	6
Total Semester Hours	178	145	153
% Basic Academic Courses	56%	80%	61%

Sources: ENBA—Escuela Nacional de Biblioteconomía y Archivonomía (National School of Library and Archive Science), mimeographed copy of program; CB—Colegio de Bachilleres ("College" of *Bachilleres*), *Plan de Estudios*, CB, Secretaría General Académica; UG—Universidad de Guadalajara (University of Guadalajara), *Universidad de Guadalajara, Guía Académica 1979*, Departamento Editorial (December 1979).

Escuela Nacional de Biblioteconomía y Archivonomía/ENBA
(National School of Library and Archive Science)

ENBA, an institution of higher education dependent on the SEP, also offers upper secondary programs of study. Prior to 1975, ENBA offered a 2-year *técnico* program in *biblioteconomía* (library science). Designed to train library technicians, it led to the qualification, *bibliotecario técnico* (technical librarian). In 1975, some of the technical courses were combined with courses in a *bachillerato* program in *ciencias sociales y administrativas* (social and administrative sciences), resulting in a three-year *bachillerato técnico* program with specializations in *archivonomía* (archive science) and *biblioteconomía* (library science). (See sample document 4.)

The *bachillerato* programs are organized on a semester basis, and a system of credits is used in accordance with the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework). Each program includes approximately 175 semester hours or 360 credits. Slightly over half of the program consists of a common core of academic courses which emphasize the social and administrative sciences. The remainder of the program is devoted to courses in the vocational specialization. (See Table 6 for the program of study in library science.)

System of Technical Institutions Dependent on the SEP

The SEP administers a system of institutions which offer only upper secondary education in several technical fields of study, including agriculture, fishing, forestry, ocean science, and a variety of industrial and service fields. These institutions, each of which usually offers upper secondary programs in only one of the fields mentioned, are part of the federal system of technical institutions which also offer education at the lower secondary, undergraduate, and graduate levels. (See Chapter IV for a complete description of the federal technical system.) While most of these institutions are not part of the corresponding tertiary institutions, their programs of study leading to higher education are designed with the corresponding undergraduate programs of study in mind. Technical institutions dependent on the SEP are described below.[11]

11. Enrollment figures for these institutions are taken from SEP, *Estadística Básica del Sistema Nacional de Educación Tecnológica*, p. 9.

Centro de Estudios Científicos y Tecnológicos/CECYT (Center of Scientific and Technological Studies)

The CECYTs offer the federal systems' programs of study in industry and service which lead to higher education. The Centros de Estudios Tecnológicos/CET (Centers of Technological Studies) offer programs in the same fields of study which do not lead to higher education. However, in areas too sparsely populated to warrant both a CECYT and a CET, some CET programs may be offered in a CECYT and vice versa. In 1979-80, 4,951 students were taking a CET-type program of study in a CECYT.

The CECYT system, which has a longer history than any of the other upper secondary institutions in the federal technical system, has its origins in the upper secondary programs of study of the Instituto Politécnico Nacional/IPN (National Polytechnic Institute). IPN now offers its upper secondary programs of study in 15 CECYTs, in which 81,630 students were enrolled in 1979-80. Most of the Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes) also operate a CECYT. In 1979-80, 40,642 students were enrolled in CECYTs affiliated with an ITR. To help accommodate the demand for upper secondary education, the SEP has also established 129 CECYTs which are not affiliated with either IPN or the ITRs. In 1979-80, 75,939 students were enrolled in their higher education preparatory programs.

The three types of CECYTs (those affiliated with IPN, those affiliated with an ITR, and those which are not associated with an institution of higher education) have developed fairly independently of one another. Thus, while their basic objective of offering programs preparatory for higher education with vocational specializations in industry and service is the same, there are some differences among the three types of institutions.

IPN's upper secondary program was originally called *vocacional* (vocational). It was a two-year program of study, consisting primarily of academic courses and one or two technical workshops. (See sample document 5 in Appendix D.) Upon completion of the 2-year program, students could either enter a tertiary level *licenciatura* program or enroll in a one- or two-year upper secondary program of technical courses which led to the qualification *técnico* (technician) in a particular vocational specialization. (See sample document 6.) The additional one- or 2-year program proved to be unpopular, and eventually the academic and technical programs were combined into a 3-year program of study.

The program of study in each type of CECYT is now six semesters in length and combines a core of academic subjects with courses in a vocational specialization, such as *administración de personal* (personnel administration), *aire acondicionado y refrigeración* (air conditioning and refrigeration), and *construcción* (construction). CECYT programs which are not affiliated with an institution of higher education and CECYT programs associated with ITRs lead to the certificate of *bachillerato* and the vocational qualification of *técnico* in the area of specialization. (See sample document 16 in Appendix D.) IPN, however, issues a certificate of completion of the CECYT program and of the *técnico* program. (See sample document 7.)

Although the programs of study vary somewhat, each includes approximately 180 to 200 total semester hours. Students usually take six to eight courses each semester. While the IPN CECYTs do not currently use a credit system, CECYTs which are not affiliated with an institution of higher education and CECYTs affiliated with the ITRs use the ANUIES credit system (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework). Thus programs at independent CECYTs include from 250 to 270 credits, while CECYTs affiliated with ITRs offer programs comprised of 278 credits. The credit system allows a student the flexibility to complete the program in five to eight semesters.

The academic courses which comprise IPN-CECYT programs of study reflect one

of the following areas of emphasis: *ciencias físicas y matemáticas* (physical sciences and mathematics), *ciencias médicas y biológicas* (medical and biological sciences), and *ciencias sociales* (social sciences). The same basic areas are offered in independent CECYTs, although the designations may vary. In general, certain academic concentrations are linked with certain vocational specializations. For example, vocational specializations in service occupations are usually offered in conjunction with an academic specialization in the social sciences. The academic courses in the programs offered in CECYTs affiliated with ITRs reflect a single concentration, designated *ciencia y tecnología* (science and technology). (See Table 7 for the program of study in electricity offered in each type of CECYT.)

Centro de Educación en Ciencia y Tecnología del Mar/CECITEM (Center of Education in Ocean Science and Technology)

The CECITEMs offer upper secondary education in ocean sciences and technology. SEP undergraduate programs in the same field of study are offered in the Instituto de Estudios Superiores en Ciencia y Tecnología del Mar/IESCITEM (Institute of Higher Studies in Ocean Science and Technology). In 1979-80, there were eight CECITEMs with a total enrollment of 2,812 students.

The program of study leads to the certificate of *bachillerato* in either *ciencias físico matemáticas* (physical and mathematical sciences) or *ciencias químico biológicas* (chemical and biological sciences) and to the qualification *técnico profesional* (professional technician) in one of nine different vocational specializations, including *acuicultura* (hydroponics), *conservación de productos pesqueros* (conservation of fishing products), *construcción naval* (naval construction), and *equipo electrónico marino* (electric marine equipment). Six semesters in duration, each program includes at least 200 semester hours, which are almost evenly divided among courses in the academic concentration and courses and workshops in the vocational specialization. Students generally take seven or eight courses each semester. A 6-month period of practice following the coursework in the vocational specialization and a report on this experience are required to earn the vocational qualification.

Centro de Estudios Tecnológicos/CET (Center of Technological Study)

Once affiliated with the Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes), most of the 48 CETs are now separate upper secondary level institutions which offer vocational programs in fields related to industry and service. While the Centros de Estudios Científicos y Tecnológicos/CECYT (Centers of Scientific and Technological Studies) offer the technical systems' industrial and service programs which prepare for higher education, CET programs are not designed to lead to higher education. (See CECYT above.) In areas too sparsely populated to warrant both a CECYT and a CET, a few CECYT programs of study may be offered in a CET, and vice versa. In this case, they would share the characteristics of programs described in the section on CECYTs. In 1979-80, 25,262 of 26,140 students enrolled in CET programs were in programs which were not designed to lead to higher education.

The six-semester CET programs lead to the vocational qualification *técnico profesional* (professional technician) in one of the specializations offered, such as *administración de empresas turísticas* (administration of tourist enterprises), *construcción* (construction), *electrónica* (electronics), and *moldeo y fundición* (smelting and molding). While some of the same specializations are offered in the CETs and CECYTs,

the CET system includes a wider variety of specializations than does the CECYT system. Students generally take seven or eight courses each semester. A system of credits is used in accordance with the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework). Programs include approximately 150 semester hours or 270 credits. At least 70% of the program is devoted to courses in the vocational specialization. Academic courses included are chosen to relate to the vocational specialization. In addition to completion of the program, a period of social service and a thesis are required for graduation. (See Table 7 for the CET program in electricity.)

Centro de Estudios Tecnológicos Agropecuarios/CETA (Center of Technological Agricultural Studies)

The CETAs offer only upper secondary education in various agricultural specializations. The system's corresponding undergraduate programs of study are offered in the Institutos Tecnológicos Agropecuarios/ITA (Agricultural Technological Institutes). Although CETAs primarily offer programs of study which lead to higher education, a few programs leading to immediate employment have been instituted recently. In 1979, there were 110 CETAs located in rural, agriculturally productive areas. Out of 34,802 students, 33,880 were enrolled in programs which lead to higher education.

Its programs which prepare for higher education are six semesters in duration and lead to the certificate of completion of the *bachillerato* and to the vocational qualification *técnico profesional* (professional technician) in one of ten different agricultural specializations, including *administración de empresas agropecuarias* (administration of agricultural industries), *apícola* (apicultural), *cañero* (relating to sugar cane) and *maquinaria agrícola* (agricultural machinery). Each program is comprised of approximately 250 total semester hours divided almost equally between general academic and vocational subjects. Students generally take eight to ten courses each semester. A period of social service, a thesis, and its defense in an examination are required for graduation.

The CETA programs which are not designed to lead to higher education, also six semesters in duration, lead to the vocational qualification, *técnico profesional*, in one of seven different specializations, including *ganadería* (livestock raising), *maquinaria*

Table 7

Upper Secondary Programs in *Electricidad* (Electricity), CECYT, CET, and CONALEP*

	CECYT			CET	CONALEP†
	IPN	ITR	Other		
Basic Academic Courses	Semester Hours				
Biology	–	4	3	–	–
Chemistry	20	18	15	–	–
Communication Techniques	–	–	–	5	–
Ecology	4	–	–	–	–
Foreign Language	10	12	12	–	4
History	6	4	3	2	1
Human Relations	–	–	–	4	–
Industrial Relations	–	–	–	4	–

Man & Technology	–	–	–	–	1
Mathematics	30	20	23	15	2
Organization	–	4	8	–	3
Personnel Management	–	–	–	5	–
Philosophy & Ethics	8	8	6	4	–
Physics	24	18	20	–	–
Psychology	4	–	–	–	–
Safety	–	4	3	–	1
Social Service	–	–	10	–	–
Socioeconomic Problems of Mexico	6	4	4	–	1
Sociology	–	–	–	–	1
Spanish	10	8	8	–	–
Technical Writing	–	–	–	5	1
Electives & Extracurricular Activities	–	13	–	–	–
Technical Courses:					
Drawing	18	12	12	22	4
Electricity & Electronics	48	24	25	99	16
Workshop	34	32	24	12	3
Total Semester Hours	222	185	176	177	38
% Electricity and Other Technology Courses	45%	37%	35%	75%	60%
% Math, Languages, Natural Sciences, Social Sciences Courses	55%	52%	53%	18%	26%

Sources: Secretaría de Educación Pública, *Guía de Carreras: Técnicos Profesionales para el Sector Industrial y de Servicios*, Subsecretaría de Educación e Investigación Tecnológicas (México, D.F., October 1980). The information on CONALEP is from *Cuaderno de Información*.

*CECYT—Centro de Estudios Científicos y Tecnológicos (Center of Scientific and Technological Studies); CET—Centro de Estudios Tecnológicos (Center of Technological Studies); CONALEP—Colegio Nacional de Educación Profesional Técnica (National College of Technical Professional Education); IPN—Instituto Politécnico Nacional (National Polytechnic Institute); ITR—Institutos Tecnológicos Regionales (Regional Technological Institutes).

†Numbers in this column represent courses rather than semester hours.

agrícola, and *sensores remotos y topografía* (remote sensors and topography). Most of the subjects relate directly to agriculture. The first two semesters constitute a common core of courses such as agricultural chemistry, agricultural physics, processes of agricultural production, and the structure of the agricultural sector, which provide the theoretical foundation for the more practical courses to follow. Courses in the third and fourth semesters, which are primarily practical in nature, pertain to one of the seven specializations. During the fifth and sixth semesters, students choose an area of emphasis, such as coffee or dairy farming, within one of the seven specializations. Areas of emphasis may be added or deleted as regional needs require.

Centro de Estudios Tecnológicos Forestales/CETF
(Center of Technological Forestry Studies)

CETFs are separate upper secondary institutions. The SEP undergraduate programs in forestry are offered in the Instituto Tecnológico Forestal/ITF (Technological Forestry

Institute). In 1979-80, there were six CETFs with a total enrollment of 1,273. The CETF's only program of study prepares for higher education and leads to the certificate of completion of the *bachillerato* program as well as to the vocational qualification, *técnico profesional* (professional technician), in *industrias forestales* (forest industries).

The six-semester program of study includes 244 semester hours. The courses are almost evenly divided between academic and vocational subjects. Students generally take seven or eight courses each semester. A period of social service as well as a thesis and its defense in an examination are required for graduation.

Fine Arts Institutions Dependent on the SEP

Centro de Educación Artística/CEDART (Center of Artistic Education). Located at three sites in the Federal District and nine in other states, the system of CEDARTs offers education at the lower secondary and upper secondary levels. (See Training for Fine Arts Teachers, this chapter.) The upper secondary programs of study lead to the certificate of completion of the *bachillerato* program and to the vocational qualification, *instructor de arte* (art teacher). The 8-semester program combines basic academic courses with courses in art. Graduates, who are also eligible to continue their studies at the undergraduate level, may teach art on an individual basis or in a preschool, primary school, or lower secondary school.

Escuela de Diseño y Artesanía (School of Design and Artisanry). In addition to its undergraduate programs of study, the School of Design and Artisanry offers two upper secondary programs which lead to the vocational qualifications, *productor artesanal* (artisan producer) and *técnico artesanal* (artisan technician). The former is four semesters in duration and the latter, six. These programs, which are not designed to lead to higher education, include mainly courses and workshops in artisanry.

Escuela Nacional de Danza Clásica (National School of Classical Dance). The National School of Classical Dance offers two upper secondary level programs leading to the vocational qualifications, *ejecutante de danza clásica* (classical dancer) and *profesor de danza clásica* (classical dance teacher). Both require completion of the fourth year of primary school for entry. The programs of study, which do not prepare for higher education, are eight or nine years in length, respectively. Each requires a year of social service, in addition to completion of the program of study, for graduation.

Escuela Nacional de Danza Folklórica (National School of Folkloric Dance). The National School of Folkloric Dance offers upper secondary programs of study leading to the vocational qualifications, *ejecutante de danza folklórica* (folkloric dancer) and *profesor de danza folklórica* (folkloric dance teacher). The programs, which require the completion of primary school for entry, are six and seven years in duration, respectively. The curriculum, which does not prepare for higher education, emphasizes the interpretation and instruction of folkloric dance.

INSTITUTIONS DEPENDENT ON THE MINISTRY OF NATIONAL DEFENSE

The Secretaría de la Defensa Nacional/SDN (Ministry of National Defense) is responsible for various military training courses. In addition, the institutions listed below offer a four-year upper secondary program which leads to the certificate of completion of a *bachillerato* program, as well as to the

military rank of *subteniente* (second lieutenant) in a particular military specialization. Those institutions dependent upon the SDN are as follows:

Escuela Militar de Aplicación de Caballería "Hermenegildo Galeana" (Military School of Cavalry Application "Hermenegildo Galeana"); México, Federal District (D.F.).

Escuela Militar de Aviación del Colegio del Aire (Military School of Aviation of the "College" of the Air); Zapopan, Jalisco.

Escuela Militar de Enfermeras (Military School of Nursing); México, D.F.

Escuela Militar de Especialistas de Fuerza Aerea del Colegio del Aire (Military School for Air Force Specialists of the "College" of the Air); Zapopan, Jalisco.

Escuela Militar de Mantenimiento y Abastecimiento del Colegio del Aire (Military School of Maintenance and Supply of the "College" of the Air); Zapopan, Jalisco.

Escuela Militar de Materiales de Guerra (Military School of War Materials); México, D.F.

Escuela Militar de Oficiales de Sanidad (Military School of Health Officials); Irapuato, Guanajuato.

Escuela Militar de Transmisiones (Military School of Transmissions); México, D.F.

Heroico Colegio Militar (Heroic Military "College"); México, D.F.

INSTITUTIONS DEPENDENT ON OTHER FEDERAL MINISTRIES

Escuela de Salud Pública (School of Public Health)

Dependent on the Secretaría de Salubridad y Asistencia/SSA (Ministry of Health and Welfare), the School of Public Health is primarily a graduate-level institution. (See Chapter V.) It does, however, offer a few short vocational programs at the upper secondary and undergraduate levels. Its upper secondary programs are not designed to lead to higher education, but rather offer vocational training in a specific aspect of public health.

These programs of study, which lead to diplomas in *promoción del saneamiento ambiental* (promotion of environmental health), *estadística básica en salud pública* (basic statistics in public health), and *administración de servicios de salud para personal no médico* (administration of health services for non-medical personnel), are 10 months, 5 months, and 3 months in duration, respectively. Students generally devote 40 hours each week to the program of study. Approximately half of each program is devoted to fieldwork in the area of specialization.

Instituto de Formación Profesional (Institute of Professional Training)

The Institute of Professional Training is a federal institution dependent on the Procuraduría General de Justicia del Distrito Federal (Attorney General of the Federal District). Although primarily a graduate-level institution (see Chapter V), it also offers short vocational programs at the upper secondary and undergraduate levels. Its upper secondary program is one year in length and leads to the vocational qualification *agente de la policía judicial* (agent of the judicial police).

Vocational Upper Secondary Education in Public Autonomous, Public State, and Private Institutions

In addition to the great variety of vocational upper secondary programs offered in institutions dependent on the federal government, institutions in each of the other categories, public autonomous, public state, private

libre (free or independent) and other private institutions (those with and those without validated programs), offer vocational upper secondary education. All five categories include institutions of higher education which offer vocational upper secondary education. There are also public state and private institutions which are separate upper secondary level institutions. There are no separate upper secondary level institutions which have been granted public autonomous or private free status.

Until recently, the emphasis in these institutions has been on programs that fill a specific vocational need and was for the most part limited to certain fields of study, such as commerce, nursing, and social work. Some institutions, especially institutions of higher education, have begun offering programs which combine a core of academic courses with courses in a vocational specialization to permit access to higher education as well as entry into the workforce.

The number of institutions that offer vocational upper secondary education is virtually limitless, and since each institution designs its own programs of study, there is enormous variety among the programs. Because the academic content of these programs varies, admissions officers should analyze each program individually in terms of the guidelines offered in Chapter VI.

Centro de Enseñanza Técnica y Superior/CETYS
(Center of Technical and Higher Education)

CETYS is a private institution of higher education whose programs of study are recognized by the Secretaría de Educación Pública/SEP (Ministry of Education). (CETYS is also described in Chapter IV.) In its Escuela de Secretarias Bilingües para Ejecutivo (School of Bilingual Executive Secretaries), CETYS offers a 6-semester program of study which leads to the vocational qualification, *secretaria bilingüe para ejecutivo* (bilingual executive secretary). The program includes a total of 180 semester hours, over half of which are devoted to secretarial courses. Students generally take 10 courses each semester. Although the program is not designed to lead to higher education, it does include certain basic academic courses, including four courses in English grammar and two each in composition, human relations, mathematics, and Spanish grammar.

Escuela de Periodismo "Carlos Septién García"
(School of Journalism "Carlos Septién García")

The School of Journalism "Carlos Septién García," whose programs of study are recognized by the SEP, is a private institution of higher education specializing in journalism. (See also Chapter IV.) At the upper secondary level, it offers a four-semester program leading to the vocational qualification, *redactor y reportero gráfico* (graphic reporter and editor). The program includes a total of 180 semester hours. Students generally take nine courses each semester. Most of the courses relate to newspaper, radio, and television journalism, except for courses in English, the history of culture, logic, modern literature, social sciences, and Spanish.

Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM
(Monterrey Institute of Technology and Higher Studies)

ITESM is an institution of higher education which has been awarded *libre* (free or independent) status by presidential decree. (See Chapter IV for more information on ITESM.) In addition to its general academic upper secondary programs of study, ITESM offers two types of vocational upper secondary programs.

One type of program provides graduates the option of continuing their education at a higher level as well as seeking employment in a particular vocation. In these programs of study, the courses in one of the ITESM *bachillerato* programs (discussed earlier in this chapter) are simply combined with courses in a vocational specialization, lengthening the program to three years. Programs have been developed which lead to the certificate of completion of the *bachillerato de ciencias físico-matemáticas* (physical and mathematical sciences), as well as to the vocational qualification of *técnico* (technician) in *contabilidad* (accounting), *máquinas-herramientas* (machinery-tools), *mecánica automotriz* (automobile mechanics), or *procesamiento de datos* (data processing). Another program leads to the certificate of completion of the *bachillerato de*

Table 8

Comparison of the Upper Secondary Programs in *Mecánica Automotriz* (Automobile Mechanics), ITESM*

	Bachillerato de Ciencias Físico-Matemáticas/Técnico Mecánica Automotriz	*Técnico Mecánico (Mecánica Automotriz)*
Basic Academic Courses:		
Biology	4	–
Chemistry	4	6
Esthetic Appreciation	3	–
History	9	4
Mathematics	18	18
Philosophical & Political Readings	9	4
Physics & Laboratory	10	10
Spanish Readings and Composition	21	8
Technical Courses:		
Automobile Workshop & Technology	28	20
Carburation	–	4
Design	–	6
Drawing	4	4
Electrical Installations	–	6
Industrial Electricity	–	10
Industrial Laboratory	–	6
Industrial Organization	–	4
Manufacturing Processes	6	12
Mechanical & Industrial Equipment	6	16
Resistance & Mechanics	–	6
Thermics	–	6
Total:	122	150
% Semester Hrs, Technical Courses	36%	67%
% Semester Hrs, Math, Languages, Natural Sciences, Social Sciences	61%	33%

SOURCE: Curriculums from ITESM (mimeographed).

*Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Institute of Technology and Higher Studies)

ciencias biológicas (biological sciences), as well as to the vocational qualification of *enfermero* (nurse).

In addition to these vocational programs which also lead to higher education, ITESM offers technical upper secondary programs leading to the *técnico electricista* (electricity technician), and the *técnico mecánico* (mechanical technician) in *dibujo industrial* (industrial drafting) and *mecánica automotriz*. These four-year programs, which are offered at what is termed *nivel medio técnico* (technical middle level), are longer than the vocational programs designed to lead to higher education, but include fewer courses each year. Approximately one-third of the curriculum is devoted to basic academic courses. (See Table 8 for a comparison of ITESM programs in automobile mechanics.)

Universidad Autónoma de Ciudad Juárez/UACJ
(Autonomous University of Ciudad Juárez)

The only upper secondary programs offered by UACJ, a public autonomous institution of higher education, prepare students in a particular vocational specialization. Although these programs are offered in the same divisions of the university which offer undergraduate programs of study, they are not designed to lead to higher education.

UACJ operates on a semester system and uses a system of credits in accordance with the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework). UACJ's Instituto de Ciencias Biomédicas (Institute of Biomedical Sciences) offers a six-semester program leading to the diploma *secretaria médico-bilingüe* (bilingual medical secretary). Comprised of a total of 294 semester hours or 472 credits, the program includes courses in clinical filing, office organization, shorthand, Spanish correspondence, and typing, as well as courses in accounting, biostatistics, business mathematics, English, and public relations.

UACJ's Instituto de Ciencias Sociales y Administración (Institute of Social Sciences and Administration) offers a program of study in social work at the upper secondary or *medio técnico* (technical middle) level. The 6-semester program, comprised of 152 semester hours or 265 credits, includes general courses in biology, introduction to the study of law, probability and statistics, psychology, Spanish composition, and sociology, as well as more specialized courses in case study, first aid, hospital social work and public health. (See Table 9.) A period of social service and a final examination are required for graduation.

Universidad Autónoma de Guadalajara/UAG
(Autonomous University of Guadalajara)

UAG is a private institution of higher education whose programs of study are incorporated by the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico). In its Escuela de Enfermería (School of Nursing), UAG offers an upper secondary program of study leading to the vocational qualification, *enfermero general* (general nurse), which closely resembles the upper secondary nursing program offered in UNAM's Escuela Nacional de Estudios Profesionales-Zaragoza/ENEP (National School of Professional Studies-Zaragoza).

UAG also offers an upper secondary secretarial program in its Escuela Universitaria para la Enseñanza Secretarial/EUPES (University School for Secretarial Education). The 5-semester program of study leads to the vocational qualification, *secretaria ejecutiva bilingüe* (bilingual executive secretary). The program includes courses in busi-

Table 9

Comparison of Semester Hours of Upper Secondary Programs in *Trabajo Social* (Social Work), CECYT, UG, UACJ*

	CECYT *Bachillerato Técnico en Trabajo Social* (6 semesters)	UG *Técnico-Trabajo Social* (8 semesters)	UACJ *Medio Técnico-Trabajo Social* (6 semesters)
Basic Academic Courses:		Semester Hours	
Anatomy	–	6	–
Biology	3	–	4
Composition	8	6	3
Economics	3	3	3
Ethics	–	3	–
Foreign Language	12	–	–
History	3	–	–
Law	9	6	6
Mathematics	8	–	–
Philosophy	6	–	–
Probability & Statistics	9	–	8
Psychology	9	6	16
Social Anthropology	–	3	3
Socioeconomic Problems of Mexico	4	3	3
Sociology	3	6	6
Technical Courses:			
Administration	4	–	3
Research Techniques	6	–	6
Social Security	6	–	4
Social Service	10	–	–
Social Work	20	79	45
Social Work Practice & Observation	60	53	42
Total Semester Hours	183	177	152
% Technical Courses	52%	74%	65%
% Basic Academic Courses	42%	25%	34%

Sources: CECYT—Secretaría de Educación Pública, *Guía de Carreras: Técnicos Profesionales para el Sector Industrial y de Servicios*, Subsecretaría de Educación e Investigación Tecnológicas (México, D.F., October 1980); UG—*Universidad de Guadalajara, Guía Académica 1979*, Departamento Editorial (December 1979); UACJ—*Catálogo Universidad Autónoma de Ciudad Juárez, 1979-80*.

*CECYT—Centro de Estudios Científicos y Tecnológicos (Center of Scientific and Technological Studies); UG—Universidad de Guadalajara (University of Guadalajara); UACJ—Universidad Autónoma de Cd. Juárez (Autonomous University of Ciudad Juárez)

ness English, filing, shorthand and typing, as well as courses in accounting, business mathematics, human relations, psychology and Spanish. Since UNAM does not offer an upper secondary program in secretarial studies, it is doubted that this program is incorporated into that university. (See the section on Significance and Limitations of Validity in the Introduction to this chapter.)

Universidad Autónoma de Nuevo León/UANL
(Autonomous University of Nuevo León)

UANL is a public autonomous institution of higher education which offers upper secondary education in numerous vocational specializations. The programs of study offered in three schools of UANL, the Escuela Industrial y Preparatoria Técnica "Alvaro Obregón" (Industrial and Technical Preparatory School "Alvaro Obregón"), the Escuela Industrial y Preparatoria Técnica "Pablo Livas" (Industrial and Technical Preparatory School "Pablo Livas"), and the Escuela Preparatoria Técnica Médica (Medical Technical Preparatory School), prepare for higher education as well as for a technical or medical vocation. The programs offered in its Escuela de Artes Visuales (Visual Arts School) prepare students in an artistic specialization, not for higher education.

In 1979, there were 3,910 students enrolled in the two industrial and technical preparatory schools. Their programs of study lead to the certificate of completion of the *bachillerato* program as well as to the vocational qualification of *técnico* in a variety of specializations, such as *aire acondicionado y refrigeración* (air conditioning and refrigeration), *electrónica* (electronics), *nutrición* (nutrition) and *modista* (dressmaker). The programs range from six to eight semesters in duration and generally include 180 semester hours. The academic courses which comprise these programs of study are similar to those in UANL's general *bachillerato* programs, except that fewer literature and general science courses and more chemistry, mathematics, and physics courses are included. In addition to the general academic courses, programs include courses and workshops in the vocational field.

In 1979, 2,381 students were enrolled in the Medical Technical Preparatory School. The programs of study lead to the certificate of completion of the *bachillerato* program as well as to the vocational qualification of *técnico* in a variety of medical specializations, such as *enfermería* (nursing), *higiene dental* (dental hygiene), *radiología* (radiology), *rehabilitación* (rehabilitation), and *terapia respiratoria* (respiratory therapy). Each 6-semester program of study is comprised of approximately 200 semester hours. The courses in the first two semesters constitute a common core of courses for all the specializations. The sixth semester is dedicated primarily to laboratory or practical work. Courses in anatomy and physiology, biochemistry, health sciences, physical chemistry and psychology are substituted for some of the literature and general scientific courses found in UANL's general *bachillerato* program. In addition, each program includes courses in the vocational specialization. For example, in the dental hygiene program, courses in dental anatomy, dental materials, dental microbiology, dental preventive methods, dental radiology, and nursing are required, as well as an entire semester of dental clinical practice.

The School of Visual Arts, which had an enrollment of 118 in 1979, offers upper secondary programs in artistic specializations. The six-semester program, comprised of approximately 150 semester hours, leads to the vocational qualification *técnico en artes visuales* (visual arts technician) with specializations in *diseño gráfico* (graphic design), *diseño textil* (textile design), *escenografía* (scenery design), *escultura* (sculpture), *grabado* (engraving), and *pintura* (painting). In addition to workshops in the area of specialization, the following general courses are required for all students: art theory, design theory, drawing, history of art and visual education.

UNIVERSIDAD DE GUADALAJARA/UG (University of Guadalajara)

UG, a public state institution of higher education, offers many vocational upper secondary programs but, unlike most institutions of higher education, does not offer a general academic upper secondary program. Instead, all of its *bachillerato* programs include a vocational component. In addition, UG offers several vocational programs which are not designed to lead to higher education.

In accordance with the ANUIES recommendations on upper secondary education (see Planning in the Introduction to this chapter), UG reformed its academic upper secondary programs in 1972, incorporating courses in vocational specializations. Completion of the reformed program of study provides graduates the option of seeking employment in a field in which they have been specifically trained, as well as continuing their education at a higher level. Graduates receive the certificate of completion of the *bachillerato unitario con adiestramiento* (unified *bachillerato* with vocational training) in various artistic, commercial, medical and technical specializations, such as *contabilidad* (accounting), *biblioteconomía* (library science), *laboratorio dental* (dental laboratory), *perforación* (keypunching), *reparación de aparatos electrónicos* (repair of electronic devices), and *salud pública* (public health).

The 6-semester program of study, which requires the completion of *secundaria* and an entrance examination for admission, is comprised of approximately 150 semester hours. Each semester includes five general academic courses (15 semester hours), common to all the specializations, and five courses (10 semester hours) in the vocational specialization. The academic portion of the curriculum includes three courses each in biological sciences, chemistry, history, mathematics, and physics; two courses each in a foreign language, literature, and philosophy; and individual courses in economics, ethics, etymology, logic, psychology, sociology, and Spanish composition. The 10 semester hours devoted to the vocational specialization include courses, laboratories, and workshops. (See Table 6 for the program of study in library science.)

In several of its schools, UG offers vocational upper secondary programs of study which are not designed to allow students the option of continuing their education at the undergraduate level. These programs, most of which require *secundaria* to enter, are offered at what is termed the *nivel técnico profesional* (professional technical level). The specific vocational qualification granted varies with the school and the program of study. In general, these programs include more courses in the vocational specialization than do programs which also lead to higher education. In some cases, however, the number of academic courses included is comparable to the number of academic courses included in programs designed to lead to higher education. (See Chapter VI, Evaluation of Vocational Upper Secondary Curriculums.)

In addition to its upper secondary level programs which require the completion of *secundaria* for admission, UG's Escuela de Artes Plásticas (School of Plastic Arts) offers two programs which begin upon completion of primary school, but which continue through the upper secondary level. These two 5-year programs of study lead to diplomas in *escultura* (sculpture) and *pintura* (painting). The programs of study which require *secundaria* for entry lead to the qualifications *actor teatral* (actor), *dibujante publicitario* (commercial artist), *diploma en danza* (diploma in dance). The first two are three years in duration, the latter, four years. Each of these programs of study consists primarily of workshops in the artistic discipline.

Upper secondary programs leading to the qualification of *enfermero* (nurse) are offered in UG's Escuela de Enfermería (School of Nursing) and its Escuela Regional de Enfermería de Ciudad Guzmán, Jalisco (Regional Nursing School of Ciudad Guzmán, Jalisco). Six semesters in duration, the program requires between 30 and 45 semester hours of courses, laboratories, and practical work each semester. Approximately 30% of the program is devoted to basic academic courses.

UG's Escuela de Música (Music School) offers two four-year programs of study which lead to the qualifications, *profesional de canto* (professional singer) and *profesional de instrumentos* (professional musician). Both require the lower secondary level qualification *instructor de música* (music teacher) for entry. (This program is described under Artistic Training in Chapter II.) In these programs, only 6 hours a week are actually spent in class; this time is fairly evenly divided between music theory classes and music lessons.

UG offers technical programs of study in two different *escuelas politécnicas* (polytechnic schools). The polytechnic school in Guadalajara offers several 8-semester programs leading to one of the following vocational qualifications: *ensayador* (assayer), *químico técnico en plásticos* (chemical technician in plastics), *químico técnico industrial* (industrial chemical technician), *químico técnico metalurgista* (chemical metallurgy technician), *químico técnico curtidor* (chemical tanning technician), *técnico electricista industrial* (industrial electrical technician), and *técnico mecánico industrial* (industrial mechanical technician). The UG polytechnic school in Ocotlán, Jalisco, offers 6-semester programs leading to the vocational qualification of *técnico* in *mantenimiento mecánico* (mechanical maintenance), *producción agrícola* (agricultural production), *químico analista* (chemical analyst), and *sanidad animal* (animal health).

Each semester, students in both schools are required to spend 36 to 40 hours per week in courses and workshops. Only about a fourth of the curriculum is devoted to basic academic courses. In the longer programs of study, the time spent in basic academic courses is comparable to the time devoted to such courses in UG's programs which prepare for higher education. For example, the eight-semester programs of study generally include seven semester-long courses in mathematics, five in physics; four in language; three each in chemistry and history; two each in literature, philosophy, and psychology, as well as courses in economics and sociology. (See Chapter VI for an evaluation of vocational upper secondary curriculums.)

UG's Escuela de Trabajo Social (School of Social Work), which also offers a *licenciatura* in social work, offers an 8-semester upper secondary program leading to the vocational qualification of *trabajador social* (social worker). Students spend from 19 to 26 hours in class each week. The program of study includes courses in ethics, general sociology, home economics, human anatomy and physiology, political economics, psychology, public health, and social anthropology, as well as courses in social work. (See Table 9.)

Universidad del Valle de Atemajac (University of the Valley of Atemajac)

This private institution offers programs of study recognized by the SEP. Its upper secondary programs of study, offered in its Centro de Estudios Científicos y Tecnológicos Valle de Atemajac (Center of Scientific and Technological Studies Valley of Atemajac), prepare students for higher education as well as for a particular vocation. In addition to the qualification of *técnico* in a vocational specialization, graduates receive the certificate of completion of the *bachillerato* in an academic specialization. Programs are offered which combine the academic concentration in *ciencias sociales* (social sciences) with vocational specializations in *contabilidad* (accounting) and *trabajo social* (social work); *ciencias físico matemáticas* (physical and mathematical sciences) with *construcción* (construction); and *ciencias químico biológicas* (chemical and biological sciences) with *laboratorio clínico* (clinical laboratory). The programs of study are identical to those offered in the SEP's CECYTs. (See description of the CECYTs earlier in this chapter and in Chapter IV.)

Universidad Nacional Autónoma de México/UNAM
(National Autonomous University of Mexico)

UNAM, a public autonomous institution of higher education, offers upper secondary programs in nursing in its Escuela Nacional de Enfermería (National School of Nursing) and its Escuela Nacional de Estudios Profesionales-Zaragoza/ENEP (National School of Professional Studies-Zaragoza). The programs of study, offered at what is termed the *nivel técnico auxiliar* (assistant technician level) lead to the vocational qualification of *enfermero* (nurse). Except for certain programs of *especialización* in nursing (see UNAM in Chapter V), they normally do not lead to higher education.

UNAM uses a system of credits in accordance with the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or laboratory coursework). The programs offered in both schools are six semesters in duration. The National School of Nursing program includes a total of 320 credits. It is comprised of 25 courses, including some basic academic courses—i.e., non-nursing courses—such as anatomy and physiology, basic and applied nutrition, developmental psychology, ecology and health, ethics, social anthropology, and statistics. During the last three semesters, a large percentage of the curriculum is devoted to classes in pathology.

According to the UNAM catalog, the ENEP-Zaragoza program, which includes 281 credits, devotes more classtime to the study of nursing than does the program of the National School of Nursing. Except for a few general courses, such as "man and his environment," and nutrition, entire semesters are devoted to the study of a particular aspect of nursing, such as psychiatric nursing or surgical nursing. Graduation from ENEP requires a year of social service, a report on the experience, and a defense of the report in an oral exam.

Either of these programs may be offered in private institutions whose upper secondary nursing programs are incorporated into UNAM. (See Appendix B for a list of institutions which offer nursing programs incorporated by UNAM.)

Teacher Training at the Upper Secondary Level

Overview

Until recently, preschool and primary school teachers, teachers of physical education at the preschool, primary, and lower secondary levels, and teachers of agricultural and industrial subjects at the lower secondary level were almost always educated at the upper secondary level. Even though the creation of institutions such as the Universidad Pedagógica Nacional/UPN (National Pedagogical University) and the Escuela Superior de Educación Física (Higher School of Physical Education) has increased the opportunities for these types of teachers to be educated at the undergraduate level, most are still educated at the upper secondary level. (See Chapter IV, Federal Tertiary Teacher Training Institutions.) In 1979, almost 14% of the *secundaria* graduates enrolled in some type of teacher training program at the upper secondary level.

Like other vocations for which students are educated at the upper secondary level, these programs have traditionally been designed to lead directly to employment; in that sense these programs, which lead to a vocational qualification such as *profesor* (teacher), were not designed to lead to higher

education. However, graduates of these programs often seek and gain admission to institutions of higher education, especially in fields related to their teaching specialization. Admission to these institutions is sometimes granted contingent upon completion of two or three additional upper secondary courses. (See Chapter IV, Access to Higher Education.)

The ANUIES recommendations for the standardization of upper secondary education have begun to influence teacher training. (See Planning, this chapter.) Many programs of study, especially those for preschool and primary teachers, have been reorganized and lengthened, incorporating more general academic courses of a *bachillerato* program into the teacher education curriculum. Because of this development and the trend toward the education of more of these teachers at the undergraduate level, some officials of the Secretaría de Educación Pública/SEP (Ministry of Education) predict that in a relatively few years the institutions which now offer teacher training programs at the upper secondary level will begin substituting general *bachillerato* programs for them, and that all types of teachers will be educated at the undergraduate level.

Legal Bases. Because of the great involvement of the federal government and the resulting standardization of curriculums, teacher education is unlike any other type of upper secondary level education. Article 3 of the 1917 Constitution and the 1973 Federal Education Law grant the federal government, as represented by the SEP, extensive control over teacher education. Since many states follow the recommendations of the SEP in terms of curriculum, grading scales, and evaluation processes, there is not as much variation in teacher education programs at the upper secondary level as in other types of programs, although some variations do exist.

While private schools which offer other types of upper secondary education may or may not choose to seek official validity for their programs, private schools which offer teacher education at the upper secondary level are required to obtain recognition of their programs of study from the SEP or from a state government prior to beginning operation. (See Official Validity, this chapter.) To obtain this recognition, private schools must, among other things, agree to use the official curriculum of the SEP or the state government, hire qualified teachers, possess adequate buildings, laboratories and workshops, and provide scholarships to a certain percentage of their students. Private schools must include in their publications and *certificados de estudios* (transcripts) the date and number of the *acuerdo* (agreement) which grants recognition to their programs of study.

Calendar and Grading. Because of the extensive influence of the SEP, many institutions which offer teacher education at the upper secondary level tend to use the same calendar and grading scale. The official SEP calendar organizes the school year, which generally begins in September and ends in June, into two semesters of approximately 16 weeks each.

The grading scale established by a 1979 presidential *acuerdo* (agreement) is based on a scale of 10 with 6 the lowest passing grade. (See Chapter IV, Grading.) Some institutions, particularly state schools or private schools whose programs are recognized by state governments, still use descriptive grades. Institutions in northern Mexico often use the same basic grading

scale, with 7 rather than 6 as the minimum passing grade. Evaluation in each course is said to be "continuous"—that is, the final grade is based on the grades obtained in each unit into which each course is divided rather than on a final examination.

Teacher Training Institutions at Upper Secondary Level

Teacher education is offered in every category of upper secondary and higher education institution. (See Categories of Public and Private Institutions, this chapter.) In 1979, there were 63 federal institutions which offered teacher education programs, with a total enrollment of 54,166; 91 state institutions with an enrollment of 59,851; and 195 private institutions with an enrollment of 89,248.[12] Since institutions in every category usually follow programs of study established by the SEP, this section is organized in terms of the types of programs that exist, that is, for preschool teachers, for primary school teachers, etc., rather than in terms of the types of institutions which offer teacher training programs.

Most institutions which offer only teacher training at the upper secondary level, as well as the divisions of tertiary institutions which offer teacher training at the upper secondary level, are generally termed *escuelas normales* (normal schools) or *escuelas normales básicas* (basic normal schools). However, in institutions of higher education which offer programs of study besides teacher training, other designations are sometimes used. For example, the Universidad Autónoma de Ciudad Juárez/UACJ (Autonomous University of Ciudad Juárez) offers its programs of study for preschool teachers in its Instituto de Ciencias Sociales y Administrativas (Institute of Social and Administrative Sciences). Some of the federal institutions which only offer a particular type of teacher education at the upper secondary level, such as the Escuela Nacional de Maestros de Educación Pre-escolar (National School for Teachers of Preschool Education), do not include the designation *normal* in their names.

Programs of Study

Programs of teacher education at the upper secondary level are usually designated *normal* or *normal básico*. Because such programs lead to the first professional teaching qualification, some of the same designations used at the undergraduate level may be used in conjunction with these programs. A program may sometimes be referred to as a *carrera* (career, or major field of study) and may also be designated *profesional* (professional). (See Chapter IV, Undergraduate Programs of Study.)

As in other types of vocational education at the upper secondary level, programs which lead only to the teaching qualification are offered at what is termed *nivel medio profesional* (professional middle level) or *nivel medio*

12. *Tercer Informe de Gobierno, Sector Educativo, 1979*, pp. 40-44.

técnico (technical middle level), while programs which also lead to the certificate of completion of the *bachillerato* are usually said to be at the *nivel medio superior* (upper middle level).

PRESCHOOL AND PRIMARY SCHOOL TEACHER TRAINING AT UPPER SECONDARY LEVEL

In 1979, there were 62 schools which offered teacher training for preschool teachers, with an enrollment of 21,953, and 278 schools which offered teacher training for primary school teachers, with an enrollment of 174,216. The federal schools which offer upper secondary education for preschool teachers are the Escuelas Nacionales de Maestros de Educación Pre-escolar (National Schools for Preschool Teachers), while the federal schools for primary teachers are the Escuelas Nacionales de Maestros de Educación Primaria (National School for Primary Teachers). Programs of study for preschool teachers and for primary teachers, which are quite similar, share the same historical development.

Prior to 1945, the federal program for urban preschool and primary teachers was different from the one for rural teachers. At that time, students preparing to be teachers in urban areas entered a six-year program following primary school, while the postprimary program for rural teachers was only four years in length. In 1945, the four-year program for rural teachers was terminated, and all preschool and primary school teachers were educated in a six-year program. Eventually, the first three years of this program were replaced by the three-year general *secundaria* curriculum (see Chapter II, General *Secundaria* Programs), and completion of *secundaria* became the requirement for admission to a three-year program for preschool and primary school teachers.[13]

The three-year program, which is still in use in some institutions, leads to a vocational qualification in preschool or primary teaching. The exact name of the qualification varies from institution to institution. Preschool teachers may be awarded any of the following qualifications: *educadora*, *maestro* or *profesor de educación pre-escolar*, *maestro* or *profesor de enseñanza pre-escolar*, or *maestro* or *profesor de jardín de niños*. Primary school teachers may be awarded one of the following: *maestro* or *profesor de educación primaria* or *maestro* or *profesor de enseñanza primaria*. Two Spanish words for teacher, *profesor* and *maestro*, are used interchangeably. *Maestro* is also a *título* (degree) awarded at the undergraduate and graduate levels; therefore, when the term *maestro* is encountered, the level at which the program is offered requires special attention. (See Chapter VI, Teacher Education.)

In 1972, the SEP reformed the three-year program of study for preschool and primary school teachers, adding an additional year of study and including enough general academic subjects to warrant the awarding of the cer-

13. Secretaría de Educación Pública, "Los Planes de Estudios para la Preparación de los Profesores de Educación Primaria," *Educación, Revista del Consejo Nacional Técnico de la Educación*, vol. V, no. 30 (Mexico: Editorial y Litografía Regina de los Angeles, October-December 1979), pp. 55-60.

tificate of completion of the *bachillerato* as well as the teaching qualification. (See sample document 8 in Appendix D.) The four-year program of study includes approximately 250 semester hours, more than any of the general *bachillerato* programs. While teachers educated in this four-year program began graduating as early as 1976, some schools, particularly state schools and private schools whose programs of study are recognized by state governments, still use the three-year program of study.

In 1975 the four-year curriculum was modified to adapt course content to reforms at the primary and lower secondary levels. At that time, teaching methods instruction was incorporated into each academic subject and separate methodology courses were eliminated. For example, the course in mathematics was replaced by a course in mathematics and its teaching. This change proved unsatisfactory, since subject specialists were not necessarily specialists in methodology.[14] As a result of a 1977 meeting of directors of teacher training institutions, the curriculum of 1975 was reorganized. Eight separate methodology courses were created, and the content of the other courses (artistic education, mathematics, natural sciences, physical education, social sciences, Spanish, and technological education) was limited to the subject of the course. The program of study is now almost evenly divided between general academic courses and pedagogy courses. (See Table 10 for reorganized study plan.)

IN-SERVICE TEACHER TRAINING AT UPPER SECONDARY LEVEL

The Centros Regionales de Capacitación y Mejoramiento del Magisterio (Regional Centers for Teacher Training and Improvement) are federal institutions which provide *capacitación* (training) and *actualización* (continuing education) to primary teachers in service. They are an outgrowth of the Instituto Federal de Capacitación del Magisterio (Federal Institute for Teacher Training) which was established in 1945 to offer training to uncertified rural teachers. Although the emphasis in the Centers' programs has shifted to short programs of continuing education which are presumed to be at the upper secondary level, training programs are still offered to allow the estimated 2,000 uncertified working teachers the opportunity to earn the teaching qualification *profesor de educación primaria* (primary teacher).

Only working teachers are eligible for this three-year training program. Each year in the program is divided into two periods which roughly correspond to the school year and the summer. During the period from October to June, teachers in training study the course material during the week and attend class only on Saturday. An intensive program requiring both class attendance and individual study is held during the summer. The curriculum covers twelve subjects each year. Students must attend both periods of the year to receive credit for their work.

14. *Ibid.*, pp. 55-60.

Table 10

Normal School Curriculum of 1975 for Primary and Preschool Teachers (Revised in 1977)

Semester:	1	2	3	4	5	6	7	8
	Semester Hours							
Artistic Education	4*	4*	4*	4*	4*	4*	–	–
Educational Technology	–	–	–	–	3*	3*	–	–
English	2	2	–	–	–	–	–	–
General Didactics	–	4	–	–	–	–	–	–
General Pedagogy	4	–	–	–	–	–	–	–
History of Education	–	–	–	–	3	3	–	–
Mathematics	3	3	3	3	3	3	–	–
Natural Sciences	3	3	3	3	3	3	–	–
Philosophy	3	3	3	3	–	–	–	–
Physical Education	2	2	2	2	2	2	–	–
Psychology	3	3	3	3	–	–	–	–
Seminar on Community Development	–	–	–	–	–	–	4	4
Seminar on Curriculum Analysis & Textbooks	–	–	–	–	–	–	4*	4*
Seminar on Educational Administration	–	–	–	–	–	–	4	–
Seminar on the Organization of Nonformal Education	–	–	–	–	–	–	–	4
Seminar on Report Development	–	–	–	–	–	–	2	4
Seminar on Socioeconomic Problems of Mexico	–	–	–	–	–	–	4	4
Social Sciences	3	3	3	3	3	3	–	–
Spanish	3	3	3	3	3	3	–	–
Special Didactics & Practice Teaching	–	–	6	6	6	6	12	10
Technological Education	2	2	2	2	2	2	–	–
Total:	32	32	32	32	32	32	30	30

SOURCE: Secretaría de Educación Pública, *Programas: Educación Normal Primaria*, Consejo Nacional Técnico de la Educación.

*Some variations in these courses exist in the program for preschool teachers.

PHYSICAL EDUCATION TEACHER TRAINING AT UPPER SECONDARY LEVEL

Prior to 1975, physical education teachers for preschool, primary, and lower secondary levels were usually educated in a three-year upper secondary program. (See sample document 9 in Appendix D.) However, in 1975, the SEP-dependent Escuela Nacional de Educación Física (National School of Physical Education), which offered only upper secondary education for physical education teachers, became the Escuela Superior de Educación Física

(Higher School of Physical Education) offering both upper secondary and undergraduate education for physical education teachers. (See Chapter IV, Escuela Superior de Educación Física.) Other institutions have followed suit. While in 1979 there were still six upper secondary schools for physical education teachers, there are now a few institutions of higher education or divisions of institutions of higher education which offer undergraduate education for physical education teachers.[15]

The upper secondary program in physical education has also recently been lengthened from three to four years, although it is reported that there are still a few institutions which offer only the three-year program of study. The three-year program included 45 year-long courses, of which only 10 were in general academic subjects. (See sample document 9 in Appendix D.) The four-year program, however, is organized in terms of semesters. It includes 75 semester-long courses or 249 total semester hours, which is more than is offered by most general *bachillerato* programs. Approximately one-third of the curriculum is devoted to general academic courses. While both the three-year and the four-year programs lead to the teaching qualification *maestro de educación física* or *profesor de educación física* (physical education teacher), information is not available as to whether the certificate of completion of the *bachillerato* is also awarded in conjunction with the four-year program of study. (See Table 11 for four-year program of study.)

Table 11

Upper Secondary Curriculum for Physical Education Teachers

First Semester	Sem. Hrs.	Second Semester	Sem. Hrs.
Anatomy	6	Anatomy	6
Basic Gymnastics	3	Basic Gymnastics	3
Dynamics of Language	3	Child Psychology	3
General Psychology	3	Dynamics of Language	3
Musical Rhythm	3	General Didactics	3
Recreation	3	Hygiene	3
Science of Education	3	Musical Rhythm	3
Volleyball	3	Recreation	3
		Social Sciences	3
		Volleyball	3
Third Semester	**Sem. Hrs.**	**Fourth Semester**	**Sem. Hrs.**
Acrobatic Gymnastics	3	Acrobatic Gymnastics	3
Adolescent Psychology	3	Anthropology	3
Anthropology	3	Athletics	3
Athletics	3	Basketball	3
Basketball	3	Dynamics of Language	3
Musical Rhythm	3	Educational Psychology	3
Physiology		General History of Education	3
Swimming	3	Physiology	6

(continued)

15. *Tercer Informe de Gobierno, Sector Educativo, 1979*, pp. 45-46.

Elective	3

Fifth Semester	Sem. Hrs.
Athletics	3
Basketball	3
Biomechanics	3
Dynamics of Language	3
Introduction to Philosophy	3
Olympic Gymnastics	3
Pedagogy	3
Practice Teaching	3
Prevention & Treatment of Sports Injuries	3
Regional Dances	3
Swimming	3
Elective	3

Sixth Semester	Sem. Hrs.
Athletics	3
Basketball	3
Biomechanics	3
Logic	3
Olympic Gymnastics	3
Practice Teaching	3
Prevention & Treatment of Sports Injuries	3
Regional Dances	3
Elective	3

Seventh Semester	Sem. Hrs.
Camping	3
Ethics	3
Evaluation of Physical Capacity	3
Group Dynamics	3
Organization & Administration of Physical Education	3
Physiotherapy	3
Practice Teaching	3
Regional Dances	3
Seminar of Problems of Mexico	3
Electives	6

Eighth Semester	Sem. Hrs.
Camping	3
Esthetics	3
Nutrition	3
Organization & Administration of Practice Teaching	3
Physiotherapy	3
Practice Teaching	3
Regional Dances	3
Electives	6
Total Semester Hours	249

Source: Curriculum from the Escuela Superior de Educación Física (Higher School of Physical Education). (xeroxed)

TRAINING FOR TEACHERS OF AGRICULTURAL AND INDUSTRIAL SUBJECTS IN LOWER SECONDARY SCHOOLS

The SEP operates two institutions which offer upper secondary education for teachers of industrial and agricultural subjects in its *secundarias técnicas* (technical *secundarias)* and *centros de capacitación para el trabajo* (centers of vocational training). (See Chapter II.) They are the Escuela Nacional de Maestros de Capacitación para el Trabajo Agropecuario/ENAMACTA (National School for Teachers of Vocational Training in Agriculture) and the Escuela Nacional de Maestros de Capacitación para el Trabajo Industrial/ ENAMACTI (National School for Teachers of Vocational Training in Industry). In 1979, there was one ENAMACTA with an enrollment of 783 and two ENAMACTIs with an enrollment of 2,120.[16] Upon completion of their four-year programs of study, students are awarded the teaching qualifica-

16. *Ibid.*, pp. 46-47.

tion of *maestro* or *profesor de enseñanza técnica agropecuaria* (teacher of agricultural/animal husbandry subjects) or *maestro* or *profesor de enseñanza técnica industrial* (teacher of industrial subjects).

UPPER SECONDARY LEVEL TRAINING FOR FINE ARTS TEACHERS

Teachers of fine arts are usually educated in the same institutions or divisions of institutions which offer education in fine arts at the upper secondary level. These programs sometimes consist of one year of study past the vocational qualification in an area of fine arts; however, they are also offered at the lower secondary level and at the undergraduate level. (See Artistic Training, Chapter II, and sections on federal fine arts institutions, this chapter, and Chapter IV.)

Chapter Four

Higher Education

Introduction

The system of higher education in Mexico is often referred to as "centralized." From certain perspectives, this is true. The Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico), Mexico's oldest institution of higher education, has long served as a model for new institutions. The fact that many state autonomous institutions, as well as many private institutions, patterned their programs of study after those of the UNAM has lent a certain unity to the system of higher education. The system may also be considered centralized in terms of geographic distribution of institutions and students. For many years, most of the institutions of higher education were located in Mexico City. Even though many institutions have been established in the states in the last thirty years, 45% of the student population is still located in Mexico City alone, and 65% is located in Mexico's three largest metropolitan areas: Mexico City, D.F.; Monterrey, Nuevo León; and Guadalajara, Jalisco.[1]

This tendency toward unity notwithstanding, there are several reasons for viewing Mexican education as decentralized. The rapidly growing system (there are over 260 institutions of higher education today, more than double the estimated number of ten years ago) includes not only traditional universities, but institutes, colleges, centers, and schools. Enrollments in these institutions vary from 1,000 to 250,000.[2] Also, the system may be considered decentralized because no organization or government body exercises complete authority over the entire system.

The Secretaría de Educación Pública/SEP (Ministry of Education) administers some institutions of higher education and has responsibility for registration of graduates of all institutions (see Registration of Graduates, this chapter). The SEP's Consejo Nacional Técnico de la Educación (National Technical Council of Education) serves as a consulting body on educational matters to institutions which request this service. The SEP also participates in educational planning with the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education).

1. *La Planeación de la Educación Superior en México*, Asociación Nacional de Universidades e Institutos de Enseñanza Superior (México: Talleres de Imprenta Ajusco, 1979), p. 33.

2. *Ibid.*, p. 32.

ANUIES, founded in 1950, attempts to provide a means for member institutions to communicate their problems and to plan for reform without sacrificing their independence or autonomy, and meetings of the rectors and directors of member institutions are held periodically.[3] The president and vice president of ANUIES are elected from among these rectors and directors. There is also an executive secretary and a central office located in Mexico City.

One of ANUIES' most important roles has been educational planning and the publication of materials for planning. With an extensive library of educational materials in the Mexico City office, the ANUIES staff carries out educational research and prepares reports and textbooks. One project has been the periodic publication of a directory of institutions of higher education in Mexico. ANUIES also publishes information on degree programs at the undergraduate and graduate levels, with information on curriculums and entrance requirements.[4]

The role of ANUIES is one of documentation, consultation, and recommendation, but not accreditation. While membership in ANUIES does indicate a desire on the part of an institution to participate in educational reform and improvement, it does not signify accreditation of the institution. Nor does ANUIES have the comprehensive authority to implement its recommendations for planning.

Official Validity of Programs of Study

Mexican law does not designate any organization or group of organizations as being responsible for evaluating, approving, or accrediting institutions of higher education; any individual may operate such an institution in Mexico. Nevertheless, not all programs of study offered by institutions in Mexico have the same legal standing or "value," for lack of a better word. This "value" is known as *validez oficial de estudios* (official validity of programs of study).

The system by which Mexican institutions have or obtain validity for their programs is unique. It cannot be directly compared to accreditation, because the system of validity of programs of study is more a determination of legal standing than of quality.

Under this system, there are certain government agencies or entities, such as the federal government, the state governments, and the SEP or other ministries, which have a right to establish official institutions of education. These agencies or entities are all public and, consequently, the programs of study offered by their institutions have official validity. On the other hand, when private organizations or individuals establish institutions of

3. "Acuerdos y Declaraciones," pp. 42-43.

4. Two ANUIES publications, *Los Estudios de Posgrado en México, 1978-79*, and *Carreras en el Sistema de Educación Superior de México*, may be ordered from the following address: ANUIES; Insurgentes Sur 2133, Piso 3, México 20, D.F.

higher education, the programs offered do not have inherent official validity. A few private institutions have been granted the status of *libre* (free or independent) by presidential decree. All of their programs of study have official validity. However, most private institutions that desire official validity for their programs must seek it through *incorporación* (incorporation) or *reconocimiento* (recognition).

INCORPORATION

Perhaps the first way that private institutions ensured that their programs of study would have legal validity was through the process of *incorporación* (incorporation). In this instance, incorporation literally means "to become a part of." A program of study offered by a private institution receives official validity by becoming, in a sense, one of the programs offered by the incorporating institution. While the private institution may issue official *constancias* (temporary documents), final official *certificados de estudios* (transcripts) and *títulos* (degrees) for incorporated programs come from the institution having the original official validity.

Incorporated programs generally are limited to fields of study offered by the incorporating institution and are similar to, if not identical to, those offered by the incorporating institution. All of the public autonomous and state and many of the federal institutions have the authority to incorporate other programs of study.

RECOGNITION

Another way a program may receive validity is through *reconocimiento* (recognition of official validity) by federal or state government agencies and ministries of education, including the SEP. Although recognized programs generally are similar to programs offered within the recognizing agencies' institutions, this is not always the case. While institutions with recognized programs may issue their own official *constancias*, *certificados*, and *títulos*, final documents are usually signed by an official of the recognizing agency. (See Chapter VI, Special Considerations.)

OTHER CONSIDERATIONS

It must be emphasized that *each* program of study within an educational institution may receive its own official validity. Thus, any private institution could have both types of validity for its various programs of study. Some ministries or state governments, however, actually do award "global" or comprehensive recognition of validity to all the programs of study offered by an institution. Some even award the institution the equivalent of a state-level free or independent status. In this case, the institution would share many of the characteristics of the national free or independent institution, but with somewhat less prestige.

Incorporation, on the other hand, is never granted to an entire institution. Some institutions purposely misuse the incorporation of some of their programs, implying that the institution itself is incorporated. This is never the case. Questions as to a particular program's validity can be resolved by requesting the *certificado de estudios*. If the program has, in fact, been incorporated, the *certificado de estudios* would be issued by the incorporating institution. All known sources of recognition or incorporation of an institution's programs are indicated in Appendix C.

Traditionally, the basic requirement for recognition or incorporation seemed to be that the private institution pattern its programs after those offered by the incorporating institution (or institutions) or the recognizing government body; this practice limited educational innovation in private institutions. In the declaration signed at the 1974 ANUIES meeting in Veracruz, a series of recommendations for the granting of validity were outlined. (See Planning, this chapter).

These recommendations allow for more flexibility in terms of programs offered, yet at the same time, set certain standards for the granting of validity. They recommend that validity be granted only when the need to establish the program of study has been demonstrated (e.g., establishment of the program could be based on the need for educational innovation). They also recommend that, without influencing validity already granted, validity only be granted to institutions in the geographic area of influence of the granting institution or agency.

According to these recommendations, private institutions seeking validity should, among others, meet the following requirements:

—follow the guidelines of Article 3 of the Constitution which relate to primary, lower secondary, teacher, or worker education;

—ensure that the program is a complete academic cycle or degree program or that it fulfills specific training objectives;

—have adequate buildings, laboratories, workshops, libraries, and other necessary installations;

—follow the program of study designated by the institution granting validity or propose variations which could be designed with the assistance of ANUIES or another institution;

—have adequate faculty, authorized by the institution granting validity;

—provide a number of scholarships to the equivalent of 5% of the student body, to be administered by the recognizing or incorporating institution;

—submit to inspection by the institution granting validity and provide any documentation required.[5]

LIMITATIONS AND SIGNIFICANCE OF VALIDITY AS RELATED TO HIGHER EDUCATION

Although official validity of programs of study has sometimes been compared to the U.S. system of accreditation, it really is not a system by which

5. "Acuerdos y Declaraciones," pp. 37-40.

programs are accredited. Neither does the type of validity, with the exception of free or independent status, indicate anything about the quality of an institution. It is truly a system through which programs of study obtain *legal* validity—in the eyes of other institutions and of the SEP's Dirección General de Profesiones (General Directorate of Professions). As such, its direct applicability to the U.S. admissions process is limited.

Some private institutions of high quality may not want or need validity for all of their programs. As illustrated by the medicine/philosophy example (see Registration of Graduates below), validity and the right to register with the SEP is simply more important in some fields of study than in others. Also, not all validated programs necessarily meet the standards of quality recommended by ANUIES. Just as the quality of public autonomous institutions varies from state to state, so do the standards for granting validity vary among the various sources of validity for private institutions. Finally, some religious institutions may be unable for legal and historic reasons to obtain validity for their programs of study through any of the established channels.

Despite these limitations in its applicability, an understanding of the system of official validity is useful because it provides meaningful categories for discussion of the various types of institutions of higher education. Furthermore, it provides insight into the source of official transcripts. An understanding of validity is also of assistance in dealing with the many private institutions in Mexico. A private institution without any validated programs is subject to no external standards or supervision at all. This is particularly significant if the institution offers fields of study in which graduates must register with the SEP in order to practice a profession. (See Registration of Graduates below.)

Categories of Public and Private Institutions

Approximately 56% of the institutions in Mexico are public, and 44% are private. Within these two broad types of institutions, there are six categories. Institutions within each of these categories share a particular source of or type of official validity of their programs of study, and they share other characteristics as well. Although each category is by no means homogeneous, certain generalizations in terms of funding, administration, programs of study, and even quality can be made. Institutions within each category also share common rights or limitations in terms of the issuance of official transcripts or documents. In fact, these six categories provide a logical way to understand the mass of universities, institutes, colleges, centers, and schools which constitute the Mexican educational system. Mexico itself describes its educational system according to these categories, and they will serve here also as a framework for describing the system.

There are three categories of public institutions: autonomous, state, and federal. All three have inherent legal validity for their programs of study. There are also three categories of private institutions: *libre* (free or independent), whose programs have official validity by presidential decree; those

with individual programs which have been recognized or incorporated by other institutions or agencies; and those whose programs do not have official validity.

The last part of this chapter is devoted to a general description of each category of institution with detailed descriptions of selected institutions in each category. (See Appendix C for a list of all known tertiary institutions in Mexico. Each institution is classified according to one of the six categories.)

Registration of Graduates

Despite the institutional diversity that exists within Mexican higher education, the SEP does perform one function which encompasses all six categories of institutions. Through its Dirección General de Profesiones (General Directorate of Professions), it registers graduates of validated programs of study. Graduates who register with the SEP receive a *cédula* (professional credential or permit) to practice a profession.[6] (See sample document 10 in Appendix D.)

Registration of graduates originated with the idea that certain professions, especially those in direct contact with the public, required supervision. The 1945 Law of Professions specified that a *cédula* would be required for practicing certain professions, including accounting, architecture, education, engineering, law, medicine, and nursing. In 1973 the law was reformed to include virtually all programs of study.[7]

While anyone who graduates from a program of study with official validity may register with the SEP and receive a *cédula*, many fail to do so because their field of study is not one which has traditionally required a professional credential. For example, although medical doctors have long been required to have a professional credential to practice medicine, philosophers probably would never be called upon to present such a credential. Perhaps even more important, many students fail to register with the SEP because they have not completed all the requirements for the *título* (degree). (See Degrees and Degree Requirements, this chapter.)

Autonomy

Autonomy, as it applies to Mexican institutions of higher education, is actually a rather loosely defined concept. Stemming from the idea that education should be separate from government, autonomy affords institutions the right to self-government.[8] However, it is not and has never been a static concept. When the National University was created in 1910 as the first autonomous institution, its administrative rules had to be approved by the federal

6. Secretaría de Educación Pública, *Ley de Profesiones y Disposiciones Conexas*, Dirección General de Profesiones de la Secretaría de Educación Pública in Talleres de Formas Rasa (México, D.F., 1976), p. 5.

7. Jaime Castrejón Diez, *La Educación Superior en México* (México: Editorial Edicol, 1979), pp. 129-131.

8. *Ibid.*, p. 47.

government. In 1929, the meaning of its autonomy was extended to full self-governance. Finally, in 1944, as the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico), it was granted full legal powers and completely separated from the government.[9]

Autonomous institutions are not limited to those with the word "autonomous" in their names; neither is autonomy limited to any one category of institution according to validity of programs of study. All of the institutions classified as "public autonomous" have been granted formal autonomy. Some of the institutions so classified, including the Instituto Tecnológico de Sonora (Technological Institute of Sonora) and the Universidad del Sudeste (University of the Southeast), do not include the designation "autonomous" in their names. On the other hand, some private institutions have been granted autonomy by the organization that funds them, and some do use the designation "autonomous." The Universidad Autónoma de Guadalajara/UAG (Autonomous University of Guadalajara) is such an institution. It is a private institution whose programs of study are incorporated by UNAM. None of the institutions dependent on the federal government have been granted formal autonomy, and none are called "autonomous." Nonetheless, some of the institutions dependent on the SEP have been granted the status of *decentralizada* (decentralized) or *desconcentrada* (deconcentrated) which is similar to autonomy.

Autonomous or not, however, Mexican institutions of higher education are quite independent. Following the violence of the late 1960s which threatened this independence, autonomy was discussed at a 1972 meeting of ANUIES in Tepic. At this meeting, the rectors and directors present signed the Declaration of Tepic which says, in part. . .

> University autonomy is absolutely necessary for the accomplishment of the ends of higher education. Even in those institutions in which autonomy does not form a part of the legal structure, we consider academic independence and the freedom of teachers and researchers which sustains it to be inviolable.[10]

This institutional independence has been quite important in the development of higher education, and it is the reason that such diversity in institutions exists. One of the great challenges facing Mexican education today is the search for adequate mechanisms for planning and institutional cooperation while preserving the independence originating from the concept of autonomy.[11]

Planning

The excessive concentration of educational opportunities in large metropolitan areas and the increasing demand for higher education are two basic

9. Alfonso Rangel Guerra, *Systems of Higher Education: Mexico, 1978*, International Council for Educational Development (N.Y.: Interbook, 1978), p. 11.

10. *Ibid.*, p. 47.

11. Castrejón Diez, p. 67.

problems facing Mexican institutions of higher education. Perhaps the most important problems, however, are those of educational reform and planning for that reform in view of society's changing needs. Obviously, the independence of institutions of higher education has complicated planning efforts.

Both the Secretaría de Educación Pública/SEP (Ministry of Education) and the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education) have participated in and contributed to planning and reform. In 1965, the SEP instituted the National Commission of Integral Educational Planning with members from various ministries, institutions of higher education, and ANUIES. In 1968, following a meeting of ANUIES in Jalapa, Veracruz, the Center for National Planning of Higher Education was created. One of its first achievements was a report entitled "Preliminary Diagnosis of Higher Education." As a result of this report, the National Program for the Education of Professors was created, representing the first national effort for improving the quality of teaching in institutions of higher education.[12]

Between 1970 and 1975, the rectors and directors of the member institutions of ANUIES met six times to discuss their mutual concerns. Each meeting was held in a different city: Hermosillo in 1970, Villahermosa and Toluca in 1971, Tepic in 1972, Veracruz in 1974, and Querétaro in 1975. From these meetings came a series of declarations and agreements, each bearing the name of the city where it was written and signed. Although not all the recommendations have been implemented, these documents together constitute an important body of thought on Mexican educational reform.[13]

The ANUIES recommendations have produced some specific results. References to the need for new legislation concerning public education and the registration of professionals resulted in the 1973 Federal Education Law and the decree reforming the Law of Professions. In response to a growing demand for higher education, the Universidad Autónoma Metropolitana/UAM (Autonomous Metropolitan University) was created in 1974 to help satisfy the demand for higher education in Mexico City. Finally, in 1977, at the urging of the federal government, a National Plan for Higher Education was developed with the cooperation of ANUIES. The plan would transform the general body of thought on educational reform into specific programming objectives. In the following sections, references to specific recommendations for reform and examples of their implementation are included as applicable.

Access to Higher Education

Although specific admissions policies vary among institutions, some generalizations can be made. Completion of one of the general academic or technical upper secondary programs considered preparatory for higher education is generally required for admission to tertiary programs. These

12. *La Planeación de la Educación Superior en México*, pp. 18-19.

13. "Acuerdos y Declaraciones," p. 44.

programs include any of the many *preparatoria* or *bachillerato* curriculums. (See Chapter III, Introduction, Programs of Study.) Certain undergraduate programs of study may also require a specific concentration at the upper secondary level. For example, an upper secondary concentration in chemical-biological sciences or medical-biological sciences is usually required for entry to an undergraduate program in medicine.

Sometimes the completion of one of the upper secondary programs primarily designed to prepare for employment (see Chapter III, Introduction, and Programs of Study) may qualify the applicant to enter an undergraduate program, although some additional upper secondary work may be required. This type of admission is likely to occur most frequently when the upper secondary specialization is related to the undergraduate major. Nursing and social work are two examples of fields of study with programs at both the upper secondary and undergraduate levels. It is common for institutions to accept graduates of upper secondary teacher training programs which do not include the *bachillerato*, on the condition that the students complete a few additional upper secondary courses. (See Chapter III, Teacher Training.)

Access to higher education in Mexico has been shaped by the fact that most upper secondary programs considered preparatory for higher education are affiliated in some way with an institution of higher education—either the program is actually offered by an institution of higher education or it is incorporated into the upper secondary program of an institution of higher education. (See Chapter III, Categories of Public and Private Institutions.) Admission to most undergraduate programs is not particularly selective. Sometimes, graduates of an institution's own upper secondary program are offered *pase automático* (automatic access) to at least some of the institution's undergraduate programs.

Mere completion of a *bachillerato* or *preparatoria* program does not, however, guarantee admission to the institution or program of first choice. Some institutions, particularly in the large metropolitan areas of Mexico City, Monterrey, and Guadalajara, have experienced overcrowding. Originally, students migrated to these areas because of the lack of opportunities to study in their home states. Even though opportunities there have increased in the last 25-30 years, many students still seek admission to institutions in Mexico City, Monterrey, and Guadalajara because of perceived differences in the quality of education. This overcrowding has led some institutions to establish admissions policies which give preference to graduates of their own upper secondary programs or of programs incorporated into theirs.[14] Some have gone a step further and limited enrollment to students from the immediate geographic area. Some have also instituted a certain grade average requirement from the upper secondary program and/or an admissions examination.

Despite the restrictions in certain areas, the nonselective admissions policies of most institutions mean that virtually all upper secondary graduates can be accommodated at the undergraduate level. Nevertheless, only

14. Castrejón Diez, p. 235.

a relatively small percentage of the population ever reaches the undergraduate level. This is not due to admissions restrictions but to economic problems and the concentration of educational opportunities in the large metropolitan areas.[15]

A peculiarity of the Mexican system is that institutions of higher education do not necessarily accept each others' upper secondary programs as equivalent. When a student applies for admission to an undergraduate program in one institution after completing an upper secondary program in another, a process of transfer of credit from the student's upper secondary program to the admitting institution's own upper secondary program takes place. Often the student is required to take a few additional upper secondary level courses prior to beginning the undergraduate program. This process of transfer of credit, whether it occurs at the upper secondary or tertiary levels, is referred to as *revalidación* (revalidation).

Undergraduate Programs of Study

Undergraduate programs of study have traditionally prepared students to practice a profession. Evidence of this is seen in some of the designations used at this level. The program of study itself is referred to as a *carrera*, literally, "career." The level of studies is designated *profesional* (professional) as often as *superior* (higher).

The duration of full *licenciatura* programs generally ranges from three to five years; however, there is one *licenciatura* program which is only two and one-half years in length. (See description of the Universidad de Guadalajara later in this chapter.) In addition, *licenciaturas* in medicine and architecture are often six years in length.

In recent years, shorter intermediate degree programs have been instituted, usually of one to two years' duration. These are called *carreras cortas* (short programs) or *salidas laterales* (lateral exits). While the two terms are used interchangeably, most *carreras cortas* are actually short-term programs with a specialization in a vocational field of study. Most lateral exits consist of the first one or two years of a complete undergraduate program; this concept provides students with a specific point at which they may leave a degree program and still receive an intermediate degree.

In some cases, the distinction between a *licenciatura* program and an intermediate degree program may not be clear to the outside observer. The designation for the degree is sometimes the same (see next section). Admission to either type of program requires the completion of an upper secondary program considered preparatory for higher education (see previous section). Generally, to be classified as a *carrera corta* or a *salida lateral*, an academic program will be no longer than two years. Exceptions to this are the three-year *profesor de enseñanza técnica industrial* program of the CeNETI, the two-and-one-half and three-year *diplomado* programs of UAG, and the *salida lateral* programs of UG. Although some of these programs are similar in

15. Rangel Guerra, p. 54.

length and semester hours completed to *licenciatura* programs, they are not designated as such by their institutions, and none of them are treated as *licenciaturas* by Mexican authorities for purposes of employment or graduate admission.

Because of the emphasis on preparation for a particular profession, *licenciatura* programs tend to be more specialized than undergraduate programs in the United States. However, the content, as well as the organization and length, of *licenciatura* programs is changing in response to the ANUIES recommendations for reform. Traditional programs now exist alongside innovative ones, even within the same institution.

Traditional programs of study are highly prescribed, with the courses and the order in which they must be taken fixed. There are generally no elective courses. Classes meet often, usually daily, and there is little work outside class. In such programs student evaluation is based almost entirely on a final examination. These programs are generally organized in terms of *facultades* (faculties) which are similar to colleges in U.S. universities but much more independent of one another. This has tended to increase institutional costs since classes, equipment, and other resources have not been shared.[16]

Recently, however, many of the *licenciatura* programs have become less specialized, with both technical and humanities courses included in each field of study. Both general and specialized courses are included, and programs are based on a progression from more general to more specialized courses. Sometimes a core of general courses known as a *tronco común* (common core) is shared by several fields of study. Classes meet less often and more independent study is required. Grades are sometimes based on periodic examinations in addition to a final examination.

Institutional organization is changing to reflect these changes in programs of study. Some institutions are divided into *unidades* (units), *divisiones* (divisions) or *departamentos* (departments). The significance of these terms varies from institution to institution. Sometimes an institution is subdivided into units which are further subdivided into divisions or departments or both. Generally these organizational options reflect more flexible curriculums, comprised of courses from more than one institutional division.

The concept of fulltime professors is a relatively new one to Mexico. Most professors practice another profession fulltime and teach on an hourly or part-time basis. Of 45,000 university professors in 1976-77, only one-sixth taught fulltime.[17] Each professor decides independently what material will be covered in the course and how it will be covered.

Until recently, most courses were offered on an annual or year-long basis. Most institutions now employ a semester system in which the period from August or September to May or June is divided into 2 *semestres* of 14-18 weeks in duration. Other academic calendars are also in use. The same 9- or 10-month period may be divided into three *trimestres*, 12 weeks in length. In both the *semestre* and *trimestre* system, institutions may offer courses

16. *Ibid.*, p. 60.

17. *La Planeación de la Educación Superior en México*, p. 37.

during the summer. Finally, there is an academic calendar in which the entire year is divided into three periods of 14 weeks each which are referred to as *cuatrimestres* or *tetramestres*.

Many institutions have implemented a system of credits. While the value of the credit is defined by each institution, many institutions use the following guidelines established by the 1972 Tepic Agreement:

- Two credits to be awarded for every hour of class per week per semester for theoretical or academic work which requires outside assignments;
- One credit to be awarded for every hour of class per week per semester for academic work which does not require outside assignments [usually interpreted to be laboratory work];
- Clinical or practical work to be awarded credit according to its overall importance to the program of study;
- Credits to be given in whole numbers and correspond to a minimum of 15 weeks of class.
- A *licenciatura* program comprises a minimum of 300 and a maximum of 450 credits, to be determined by the institution.[18]

The length of programs in years is often not a reflection of the length of the program in terms of the number of courses, semester hours, or credits which comprise the program. Since the ANUIES definition of the credit is based on semester hours and since some institutions do not use the ANUIES credit system, information as to program length in semester hours is included whenever possible. To convert semester hours to the ANUIES credit system for comparison with programs of study of other Mexican institutions, multiply semester hours of theoretical classwork by 2 and add to the total number of practical hours. This provides a basis for comparison of programs of study, not only within an institution, but across institutional lines. (See Chapter VI, Comparison of *Licenciatura* Programs.)

Degree and Degree Requirements

The basic full-length undergraduate degree is generally known as the *licenciatura* (licentiate). A holder of the degree is usually called a *licenciado*. Many *licenciatura* degrees, however, are rarely referred to as *licenciaturas*. Instead, the designations for the degree and the holder of the degree often come directly from the field of study. Such *licenciaturas* include the following:

abogado (lawyer)
actuario (actuary)
administrador (administrator)
antropólogo (anthropologist)
arqueólogo (archeologist)
arquitecto (architect)
biólogo (biologist)
bioquímico (biochemist)
cirujano dentista (dentist)
físico (physicist)
geólogo (geologist)
ingeniero (engineer)
investigador (researcher)
matemático (mathematician)
médico cirujano (physician)
médico veterinario (veterinarian)
oceanólogo (oceanologist)
odontólogo (dentist)

18. "Acuerdos y Declaraciones," pp. 13-15.

contador público (accountant)
ecólogo (ecologist)
estomatólogo (stomatologist)
farmacéutico (pharmacist)
optometrista (optometrist)
químico (chemist)
sociólogo (sociologist)

The only full-length undergraduate degree that was, until recently, sometimes not regarded as a *licenciatura* was the degree of *profesor* or *maestro* (teacher), awarded by most tertiary-level institutions of teacher education. Because the first professional teaching qualification is awarded at the upper secondary level (see Chapter III, Teacher Training at Upper Secondary Level), the postsecondary teaching degrees were considered by some to be comparable to graduate degrees. Since the 1973 Federal Education Law established that the undergraduate teaching degree awarded by institutions of higher education is, in fact, a *licenciatura*, most institutions have replaced the *profesor* and *maestro* degrees with the *licenciatura* in a particular facet of education. (See Chapter VI for more information on the development of teacher education.)

There are also several intermediate degrees awarded following a *salida lateral* (lateral exit) from a *licenciatura* program or following the completion of a *carrera corta* (short program). The intermediate degree, as well as the graduate, is often designated *técnico* (technician) in a field of study—for example, *técnico en topografía* (technician in topography). Other variations of the *técnico* degree are also used, such as *técnico profesional* and *profesional técnico* (professional technician). Intermediate degrees, however, are not limited to these variations of technician.

Other intermediate degrees include the following:

agrónomo (agricultural specialist)
auxiliar (assistant)
ayudante (assistant)
calculista (appraiser)
controlador (controller)
dasónomo (forestry specialist)
despachador (dispatcher)
dibujante (draftsman)
diplomado (diploma holder)
estadístico en salud pública (public health statistician)
histopatólogo y embalsamador (histopathologist and embalmer)
instructor (instructor)
mecánico (mechanic)
meteorólogo (meteorologist)
profesor de enseñanza técnica industrial (teacher of technical industrial education)
residente (resident)
zootecnista (animal husbandry specialist)

NOTE: Some of these designations are also used as vocational qualifications awarded at the upper secondary level.

In some cases, the same term may be used to designate a *licenciatura* degree at some institutions and an intermediate degree at others. It is the responsibility of each institution to determine which of its programs are in fact *licenciatura* programs. For example, the degree of *piloto* is a *licenciatura* awarded by the Escuela de Aviación Naval (School of Naval Aviation). However, it is also awarded as an intermediate degree following a short-term vocational program offered by the Centro Internacional de Adiestramiento de Aviación Civil/CIAAC (International Training Center in Civil Aviation).

(Both institutions are described later in this chapter.)

Degrees which are sometimes awarded as *licenciaturas* but which may also be awarded as intermediate degrees include the following:

asesor (advisor)
actor (actor)
compositor (composer)
decorador (decorator)
director (director)
diseñador (designer)
escenógrafo (scenery designer)
escultor (sculptor)
etnomusicólogo (ethnomusicologist)
grabador (engraver)
laboratorista (laboratory specialist)
maquinista (machinist)
musicólogo (musicologist)
notario (notary)
oficial (officer)
piloto (pilot)
pintor (painter)
restaurador (restorer)
teólogo (theologian)

The *título* (degree) is the broad term used to refer to any of the intermediate or *licenciatura* degrees. It is also used to refer to the holder of a degree. For example, the holder of a *licenciatura* bears the "title" of *licenciado*. Often the designation for the holder of the degree is the one commonly associated with the degree, e.g., *ingeniero, técnico*.

Degree requirements usually include successful completion of all coursework, as well as a period of *servicio social* (social service), a thesis, and an *examen profesional* (professional examination). Social service is a required period of service to the community, usually in a field related to the undergraduate program of study, which lasts from six months to a year. The professional examination is actually the defense of the thesis before a jury of professors.

Only a relatively small percentage of students ever complete all these requirements and receive their degrees. A student who has completed all the coursework leading to a degree but who has not yet completed all the other requirements is known as an *egresado pasante*. An *egresado pasante* is able to obtain a *certificado de estudios* (transcript) indicating completion of the coursework part of the program. The *egresado pasante* also can obtain a letter from the institution indicating that a certain amount of coursework has been completed. This letter is known as a *carta de pasante*. (See sample document 12 in Appendix D.) A *carta de pasante* may sometimes be issued to students who have completed a certain percentage of but not all of a given program; it is wise to consider this document only in conjunction with the official transcript. Care must also be taken with the *carta de pasante* since it often resembles an official *título*. (See sample document 13 in Appendix D.)

Because so many students complete all the coursework but never finish the other degree requirements, ANUIES has sought ways to make these requirements more meaningful and at the same time to facilitate their completion. Social service, for example, often becomes a mere bureaucratic formality required to complete the degree.[19] ANUIES has recommended that social service be better monitored by individual institutions and that

19. Rangel Guerra, p. 60

a national Social Service Commission be set up to help coordinate social service with the needs of the community.[20]

In accordance with the recommendations of ANUIES in the 1971 Declaration of Villahermosa, alternatives to the thesis and professional examination have been established by many institutions. Although specific alternatives vary with the institution, some options include a research project, a thesis and oral examination, a summary of related professional experience, and a professional examination. Another alternative involves the completion of a certain percentage of a graduate program, usually 50%, within the same institution or at another institution. Some institutions, which have not established options to the thesis, have incorporated independent study, thesis seminars, and social service hours into the curriculum, making completion of the coursework and the award of the degree simultaneous.

Students who have not yet completed their *licenciatura* degrees generally do not have access to graduate education in Mexico, although institutions sometimes allow them to begin graduate programs on the condition that the undergraduate degree be completed within a specified period of time. It is also only with a degree from a program of study with official validity that a student can register with the SEP's General Directorate of Professions and receive a *cédula* (professional credential or permit). (See Registration of Graduates, this chapter.)

Distribution of Students by Field of Study

The distribution of the Mexican student population by academic area shows that students still tend to select traditionally popular fields of study, irrespective of Mexico's current manpower needs. According to statistics compiled by ANUIES in 1976-77, 33% of the country's undergraduate students were enrolled in programs in social sciences and administration, most of them in commerce and law; 30% were enrolled in programs in engineering and technology; and 22% in programs related to the health sciences, 16% in medicine alone. The remaining students were enrolled in agriculture/animal husbandry, the natural and exact sciences, and the humanities, in this order.[21]

ANUIES expressed concern over this distribution of students by field of study in its 1974 Declaration of Veracruz.[22] Later, it suggested that better student guidance and orientation could help improve the awareness of available programs and their importance to the nation. The SEP has promoted much-needed technical and scientific fields through the establishment of its technical institutes which specialize in agriculture, fishing, industry, and ocean sciences. These institutes emphasize not only the fields of study necessary for national development but also the fields linked to the developmental needs of the regions where the institutes are located.

20. "Acuerdos y Declaraciones," p. 35.
21. *La Planeación de la Educación Superior en México*, p. 35.
22. "Acuerdos y Declaraciones," p. 32.

Nonformal Education

As early as 1971 in the Villahermosa Declaration, ANUIES contemplated the possibility of a national program of certification of knowledge by examination based on a standard specification of knowledge acquired at each grade level.[23] Although such a system has not been established on a national scale, many institutions have established their own systems of credit by examination.

These systems are usually referred to as *educación abierta* (open education) or *sistema de enseñanza abierta* (system of open education). Students prepare for examinations on their own, with textbooks or workbooks recommended by or sold by the institutions and with a professor/advisor available to assist them as needed. Each institution holds its own examinations. Transcripts, which specify that the open system was used, list all courses and grades.

Private institutions such as the Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Education), as well as public institutions such as the Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes) have established systems of open education. The version of open education at the Universidad Pedagógica Nacional/UPN (National Pedagogical University) is called *sistema de educación a distancia*/SEAD (system of long distance education).

Although in some cases students may choose to pass some courses by examination through the open system, in most cases open education is limited to students completing an entire degree by open education. In the Instituto Politécnico Nacional/IPN (National Polytechnic Institute), for example, certain programs are offered only in the open mode.

Grading

Practically all grading systems in Mexican higher education are based on a scale of 10 points. However, application of the 10-point scale varies among institutions. Not only does the minimum passing grade vary from 6 to 7, but two basic descriptive grading systems are also used which correspond to several different ranges of numerical grades. The specific descriptive terms used may also vary somewhat from institution to institution. In addition, any of the numerical grading scales may be used alone.

As indicated in Table 12, the minimum passing grade of 6 is equivalent to the minimum passing grade of 7. Obviously, it would be more difficult to earn a grade of 7 when 6 rather than 7 is the lowest passing grade. The lowest passing grade also represents the lowest passing average with which a student can graduate; thus the U.S. concept of a "D" grade does not exist.

The suggested grade equivalencies of Mexican to American grades in Table 12 will not be accurate in every case. Severity of grading varies not only from institution to institution but from professor to professor. (Although the main

23. *Ibid.*, p. 4.

Table 12

Comparison of 7 (70) and 6 (60) Numerical Grading Scales to Descriptive Grade Equivalents and U.S. Letter Scale

7 (70) Scale	Approximate U.S. Equivalent	Descriptive Grade Equivalent			6 (60) Scale
10 (100)	A+	*Excelente*	E	Excellent	10 (100)
9 (90)	A	*Muy bien*	MB	Very good	9 (90)
8 (80)	B	*Bien*	B	Good	8 (80)
	B–				7.5 (75)
	C+	*Regular*	R	Average	7 (70)
7 (70)	C	*Suficiente*	S	Sufficient	6 (60)
6 (50)	F	*No acreditada*†	NA	Not passing	5 (50)
9-10‡	A	*Muy bien*	MB	Very good	10 9-10‡
8-8.9	B	*Bien*	B	Good	8 7.5-8.9
7-7.9	C	*Suficiente*	S	Sufficient	6 6-7.4
6	F	*No acreditada*†	NA	Not passing	5 0-5.9

*The descriptive grade "*regular*" may be used instead of "*suficiente*" when 7 (70) is the lowest passing grade.

†Other terms used include R/*reprobado* (failing); NS/*no suficiente* (not sufficient); D/*deficiente* (deficient).

‡Several variations of these scales are also in use, including variations on a scale of 100.

goal is to pass, the full range of grades is used.) Where information on grade distribution is available, few patterns are evident. It does appear, however, that the use of more traditional teaching methods, including dependence on a final examination, tends to yield more grades on the lower end of the spectrum. On the other hand, newer teaching methods, including the use of periodic examinations, tend to yield higher grades.

There are variations of the Mexican descriptive grading system which may lead to confusion. *No acreditada*, although often used as the designation for the range of failing grades, may also indicate that a student has not yet taken the examination.

Other terms which do not correspond to numerical grades and are thus not included in Table 12 are described below. Their exact meaning varies among institutions.

ACR/*acreditada* (passed) indicates that a course was passed with no specific grade, as in a pass/fail system.

EQ/*equivalencia* (equivalence) indicates that one course was substituted for another.

ND/*no derecho* (no right) indicates that a student did not have the right to take the final examination due to excessive absences or low grades.

NP/*no presentada* (not taken) indicates that the student did not take the final examination.

REV/*revalidada* (revalidated) signifies transfer credit from another institution.

Students who fail or miss the final examination are generally given at least one other opportunity to pass it. The regularly scheduled final examination is referred to as the OR/*examen ordinario* (ordinary examination). The EX/*examen extraordinario* (extraordinary examination) usually denotes the first make up examination; and the TS/*examen a título de suficiencia*, the second. However, the meaning of these terms does vary. In some cases, the three exams vary in severity, and students may take only one of them. (See the description of ENBA, this chapter.) The *examen a título de suficiencia* often denotes an exam to earn credit for a course not actually taken or to validate transfer credit. (See descriptions of ENS-FEP and UANL, this chapter.)

Descriptions of the Six Categories of Public and Private Institutions of Higher Education

Public Autonomous Institutions

Public autonomous institutions are funded by the federal government, a state government, or a combination of the two. Usually created by an Act of Congress, either federal or state, they are self-governing. As such, they have the authority to name their own administrative and academic authorities, manage their own budgets, and determine their own programs of study. They also issue their own official *certificados de estudios* (transcripts) and *títulos* (degrees). (See Chapter VI, Mexican Degrees and Qualifications.)

There are currently 32 public autonomous institutions of higher education, out of a total of more than 260 institutions of higher education in Mexico. Yet, in 1976, public autonomous institutions accommodated approximately 64% of the student population, more than any other category of institution.[24]

The category includes the oldest institution of higher education in Mexico, the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico), as well as some of the newest institutions. UNAM's origins lie in the Real y Pontificia Universidad de México, founded in 1551. Of the other autonomous institutions, only two were created during the colonial era; others were founded in the 1800s as civil colleges and literary institutions.

In the past decade, more public autonomous institutions have been established in response to the increasing demand for higher education. The Universidad Autónoma Metropolitana/UAM (Metropolitan Autonomous University) and the Universidad Autónoma de Ciudad Juárez/UACJ (Autonomous University of Ciudad Juárez) were founded in 1973 to help meet the educational demand in the Federal District and northern Chihuahua, respectively. Other recently created institutions include the Universidad Autónoma de Baja California Sur (Autonomous University of Baja California Sur) and the Universidad Autónoma de Chiapas (Autonomous University of Chiapas), both founded in 1975, as well as the Universidad Autónoma de Tlaxcala (Autonomous University of Tlaxcala), founded in 1976.

There are also institutions which formerly belonged to another category and have only recently been granted autonomous status. The Universidad Autónoma de Nuevo León/UANL (Autonomous University of Nuevo León), for example, was the public state institution, University of Nuevo León, until 1971 when it was granted public autonomous status. Until 1973, the Universidad Autónoma de Chapingo (Autonomous University of Chapingo) was the Escuela Nacional de Agricultura (National School of Agriculture), a federal institution dependent on the Secretaría de Agricultura y Recursos Hidráulicos/SARH (Ministry of Agriculture and Water Resources).

Among these institutions, there are those with more financial resources than others. Most charge only nominal tuition, being dependent on the federal and/or state government for their funding. Generally, institutions in the Federal District, so-called national institutions, have more resources available to them than do institutions in the states. Comparing financial resources to enrollment, UAM spends more money per student than any other public autonomous institution. UNAM also receives a substantial percentage of the monies allocated for higher education. As a result, both UAM and UNAM have excellent classroom and laboratory facilities and a higher percentage of fulltime professors than other public autonomous institutions. On the other hand, the quality of instruction and research in the public autonomous institutions in the states sometimes suffers due to lack of resources.[25]

24. Rangel Guerra, p. 7.
25. Castrejón Diez, pp. 106-109.

Public autonomous institutions employ both the most traditional and the most modern educational models; most are neither completely traditional nor completely modern, but a mixture of the two. Though changes have been made in recent years, UNAM is still primarily a traditional institution. Most of the older public autonomous institutions were modeled after UNAM. Although these institutions may be in transition today, many of them, including the Universidad Autónoma de Chihuahua (Autonomous University of Chihuahua), the Universidad Autónoma de Nuevo León/ UANL, and the Universidad Autónoma del Estado de México (Autonomous University of the State of México), still offer their programs of study in independent faculties.

Largely through the efforts of ANUIES, institutions created in the past decade have implemented many educational innovations. Both UAM and UACJ, founded in 1973, could be called the forerunners of the recently created institutions. Neither is organized according to traditional faculties and both use a system of credits and common core courses. Since their establishment, they have served as models for new institutions and for the reform of existing ones.

In the following sections, UNAM, UAM, and UANL are discussed in greater detail. (The public autonomous institutions, with their founding dates and information on undergraduate enrollment, when available, are listed in Appendix C.)

DESCRIPTIONS OF UNAM, UAM, AND UANL

Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico)

UNAM is the oldest and largest of the public autonomous institutions. Enrollment figures for 1980 show 165,760 undergraduate students, representing approximately 20% of the total national student population at this level. The 300,000 figure so often quoted as the UNAM student population includes both secondary and undergraduate programs. Total enrollment figures, including graduate students, reached 309,560 in 1980.

Although the UNAM enrollment has increased steadily over the past ten years, its percentage of the national undergraduate enrollment has declined from 27.9% in 1970. This percentage decline may be attributed to the general decentralization policy in effect nationwide. The tendency has been to decrease enrollment in the largest, most crowded institutions by creating alternative institutions and campuses throughout the republic.

Such decentralization has occurred within UNAM itself. UNAM was originally located on only one campus called the Ciudad Universitaria/CU (University City) and was situated in the south of the nation's capital, the Distrito Federal/D.F. (Federal District). A population explosion in pre-university and university age groups during 1967-72 led to the overcrowding of the CU campus, and in order to resolve this problem, physical decentralization took place under the name Programa de Descentralización de Estudios Profesionales de la UNAM (Decentralization of Professional Studies Program of the UNAM). This program resulted in two significant changes at UNAM: entrance examinations, which had been suspended for a number of years, were reinstated; and educational services were redistributed throughout

the metropolitan area of Mexico City through the establishment of five Escuelas Nacionales de Estudios Profesionales/ENEP (National Schools of Professional Studies), located in the northwestern and eastern parts of the Federal District.

UNAM is divided into *facultades* (faculties), *escuelas nacionales* (national schools), and *institutos de investigación* (research institutes). The faculties include Accounting and Administration, Chemistry, Dentistry, Economics, Engineering, Law, Medicine, Philosophy and Letters, Political and Social Sciences, Psychology, Sciences, and Veterinary Medicine. In addition to the ENEPs at Acatlán, Aragón, Cuautitlán, Iztacala, and Zaragoza, the national schools include Architecture, Music, Nursing, Plastic Arts, and Social Work. The faculties offer programs through the doctoral degree, while the national schools do not. The research institutes conduct research and organize seminars and publications in certain academic disciplines. Unlike the faculties and national schools, the research institutes do not offer degree-granting programs, although a multidisciplinary program administered by a faculty or another entity within the university may be under their auspices.

Admission to UNAM is based on the completion of an upper secondary program considered preparatory for higher education (see Chapter III), and UNAM's own entrance examinations, which are given in the six areas studied at the upper secondary level. Students coming from UNAM's Escuela Nacional Preparatoria/ENP (National Preparatory School) or its Colegio de Ciencias y Humanidades/CCH ("College" of Sciences and Humanities) are exempted from the entrance exams if they finish their upper secondary program with a minimum grade average of 7.0; they are admitted according to the enrollment limits of the individual faculties. Selection into programs with limited enrollment is made on the basis of academic disciplines and grade point averages within the upper secondary program. Those whose averages are below 7.0 must follow the procedure set out for students who did not graduate from either ENP or CCH.

Those students who are not graduates of ENP or CCH must take UNAM's entrance examination. It is given only once per academic year, generally in the UNAM stadium. Students who do not pass may take the exam again the following year. In 1971, 93% of the 23,409 students taking the exam passed it. In 1980, 42,710 students took it and only 81% passed.

As mentioned above, there are faculties at UNAM with limited enrollments. These limitations were established within these faculties in accordance with national policy on the demand for professionals in certain fields. The following faculties at UNAM began to limit enrollments as of the years shown in parentheses: Medicine (1975), Dentistry (1976), Veterinary Medicine (1978), Law (1980), and Psychology (1980). Additionally, students from other states where such programs are offered in public institutions may not apply to faculties with limited enrollment. This policy was designed to encourage students to study locally rather than to contribute to the overpopulation of the national university.

Academic programs at UNAM are offered on a semester basis. The semesters at UNAM generally comprise 16 weeks of classtime plus an examination period. UNAM's academic calendar changes slightly from year to year, beginning in late October and running through August.

At the undergraduate level, UNAM offers *licenciatura* programs in numerous fields of study, as well as *salidas laterales* (lateral exits) leading to the intermediate degree of *técnico*. The *técnico* program was originally designed to provide a short-term, vocationally-oriented degree which would prepare the student for work in certain fields. A student opting to take the *técnico* program must first be admitted to the *licenciatura* program, then after a certain number of courses may apply to the diploma-granting

program. *Técnico* programs following this format have for the most part been discontinued because of low enrollments. Only the *técnico* program in nursing follows a pattern different from that just described. It is, rather, an upper secondary program (described in Chapter III).

UNAM courses are allotted a credit value in accordance with the ANUIES recommendations on the use of the credit system (described earlier in this chapter). The *técnico* program comprises 80 to 250 credits of the longer *licenciatura*. According to UNAM's General Rulebook, *licenciatura* programs include 300 to 450 credits of coursework, depending on the field of study, and generally can be finished in 8 to 10 semesters. Some programs, such as medicine, include 11th and 12th semesters of social work in the program of study.

Licenciatura programs are divided into the six areas of concentration offered at the upper secondary level: classical humanities, economic-administrative sciences, social sciences, physical-mathematical sciences, chemical-biological sciences, and fine arts. The shortest programs of study are in classical humanities (300-320 credits). Programs in fine arts range from 336 to 362 credits, in social sciences from 362 to 372 credits, in chemical-biological sciences from 310 to 450+ credits (medicine, veterinary medicine, and dentistry fall into this area), and in physical-mathematical sciences from 352 to 450 credits.

Table 13 compares the undergraduate program of studies in philosophy at UNAM's CU campus, ENEP-Acatlán, and Open University System. Even though the specified length of humanities programs is between 300 and 320 credits, the CU and SUA programs of study in philosophy include only 196 credits. They are not, however, considered to be *carreras cortas* (short programs) but are full *licenciatura* programs. Note that the CU program includes almost as many courses as the ENEP program (which includes 320 credits), and all three are eight semesters in length.

The difference in curriculum in the three programs reflects the difference in educational philosophy behind them. The CU curriculum reflects a traditional unidisciplinary program with no courses common to all disciplines. Thus, transfers from one program to another are very difficult. On the other hand, the ENEPs, which began offering those programs of study which were in greatest demand at CU, offer a common core of courses, in some cases, during the first several semesters in related programs. For example, in the ENEP-Acatlán, which offers programs in economics and social sciences, humanities, and physical-mathematical sciences, 9 of the 13 undergraduate programs offered share a common core of courses. Finally, the SUA program sets out few formal courses but requires independent work within general subject areas.

Table 13

Licenciatura en Filosofía (Philosophy), UNAM*

CU-Facultad de Filosofía y Letras*		ENEP-Acatlán*		SUA*	
	Credits		Credits		Credits
		First Semester			
Esthetics I	4	Basic Econ.	6	History of Philos. I	8
Ethics I	4	History of Culture I	6	Intro. to Philos. &	
Hist. of Philosophy I	4	Intro. to Epistemology	8	Prin./Techniques of	
Intro. to Philosophy I	4	Linguistics I	10	Philos. Research I	8

(continued)

Logic I (1)	4	Pedagogical Theory I	6	Logic I	8
Prin./Techniques of Philos. Research	4				
		Second Semester			
Æsthetics II	4	Basic Political Sci.	6	History of Philos. II (1)	4
Ethics II	4	Basic Sociology	6	Intro. to Philos. & Prin./Techniques of Philos. Research II	8
Hist. of Philosophy II	4	History & Culture II	6		
Intro. to Philos. II	4	Linguistics II	10	Logic II	8
Logic I (2)	4	Pedagogical Theory II	6		
Prin./Techniques of Philos. Research	4	Philos. Research	6		
		Third Semester			
Logic II (1)	4	Epistemology I	6	Ethics	8
Ontology or Metaphysics	4	History of Culture III	6	History of Philos. II (2)	4
Philos. in Mexico (1)	4	History of Philos. I	6	Ontology-Metaphysics	8
Philos. of History (1)	4	Logic I	6		
Philosophy of Sci. (1)	4	Philos. Anthropology I	6		
Theory of Knowledge (1)	4	Philosophy in Mexico	6		
		Elective	6		
		Fourth Semester			
Logic II (2)	4	Epistemology II	6	Esthetics	8
Ontology or Metaphysics	4	History of Culture IV	6	History of Philos. III (1)	4
Philos. in Mexico (2)	4	History of Philos. II	6	Theory of Knowledge	8
Philos. of History (2)	4	Logic II	6		
Philos. of Science (2)	4	Philos. Anthropology II	6		
Theory of Knowledge (2)	4	Philos. of History	6		
		Elective	6		
		Fifth Semester			
Didactics of Philos.	4	General Ethics I	6	History of Philos. IV (2)	4
Hist. of Philosophy (1)	4	History of Culture V	6	Philos. of History	8
Philos. of Education (1)	4	History of Philos. III	6	Philos. of Science	8
Electives—3 or 4		Logic III	6		
		Ontology I	6		
		Society, Economics, Politics in Mexico I	8		
		Elective	4		
		Sixth Semester			
Hist. of Philosophy (2)	4	General Ethics II	6	Philos. in Mexico	8
Philos. of Education (2)	4	History of Culture VI	6	Teaching Workshop	12
Teaching Workshop	4	History of Philos. IV	6	Elective: Philosophical/ Social History	8
Electives—4 or 5		Logic IV	6		
		Ontology II	6		
		Society, Economics, Politics in Mexico II	8		
		Elective	4		

		Seventh Semester			
Hist. of Philosophy (3)	4	Esthetics I	6	Elective: Ontology	12
Teaching of Philos.	4	General Didactics	6	Elective: Philosophy of Science	12
Electives—4 or 5		Hist. of Culture VII	6	Elective: Philosophical/ Social History	8
		History of Philos. V	6		
		Philos. of Science I	6		
		Society, Economics & Politics in Mexico III	8		
		Elective	4		
		Eighth Semester			
Hist. of Philos. (4)	4	Didactics of Philos.	6	Elective: Ontology	12
Electives—5		Esthetics II	6	Elective: Philosophy of Science	12
		Hist. of Culture VIII	6	Elective: Philosophical/ Social History	8
		History of Philos. VI	6		
		Philos. of Science II	6		
		Elective	6		
		Elective	3		
TOTAL Credits: 196			32b		196
Courses: 50			53		24

*UNAM—Universidad Nacional Autónoma de México (National Autonomous University of Mexico); CU—Ciudad Universitaria (University City); ENEP—Acatlán—Escuela Nacional de Estudios Profesionales-Acatlán (National School of Professional Studies-Acatlán); SUA—Sistema de Universidad Abierta (Open University System).

Source: *Planes de Estudio UNAM*. Dirección General de Publicaciones (México).

Students at UNAM are expected to complete their programs of study within certain time limits. Both the *técnico* and *licenciatura* programs must be completed within a period of time not to exceed more than 50% of the established length of the program. Students who do not complete their program within this time limit may not re-register, and can only complete the program through a series of extraordinary examinations (see below). Those who temporarily interrupt their programs may re-register, but are subject to any modifications in the program that may have taken place in their absence.

All three programs stipulate the following degree requirements: (1) completion of all courses in the study plan; (2) certification attesting to the student's successful passing of a foreign language translation test; (3) completion of social service requirements; and (4) completion of a thesis and professional examination. Often the thesis is the student's first experience in writing a research paper. The professional examination is seldom, if ever, failed since the thesis advisor is responsible for making sure the student is ready to defend the written work. Even so, the final two requirements tend to limit the number of students who actually obtain a degree from UNAM. A student actually may obtain a degree many years after finishing a program of study.

According to UNAM statistics, the percentages of students who finish coursework or who earn a degree within the time periods shown below is as follows:

	Complete Coursework	Earn Degree
Within 5 years	1%	1%
Within 6 years	5%	5%
Within 7 years	19%	11%
Within 8 years	9%	7%
Within 9 years	5%	6%

There is a high desertion rate. Many students become sidetracked when it comes to fulfilling social service and professional exam requirements. Those students who obtain a *título*, even within nine years, are in a minority. There are no precise statistics on when, or if, the remaining students finish their coursework or earn a degree.

UNAM uses a descriptive grading system, with MB (10), B (8), and S (6) representing passing grades and NA (no numerical equivalent) representing "no credit" or "not passing." Students who do not present the *examen ordinario* (final examination) at the regularly scheduled time may make arrangements to take an *examen extraordinario* (make up or extraordinary examination). Students who do not pass a course (i.e., receive an NA grade) may re-register in the course up to a maximum of two additional times in order to pass it. More often, rather than repeating the course, a student will present an extraordinary exam. Students may present a maximum of two extraordinary exams per semester.

It cannot be assumed, however, that all students who take extraordinary exams do so because they have failed a course. Students who want to accelerate their programs of study may study independently and present an extraordinary exam. Others who have interrupted their courses of study (see above) may have no choice but to complete their programs through extraordinary exams.

Universidad Autónoma Metropolitana/UAM (Autonomous Metropolitan University)

UAM is a public autonomous institution in Mexico City created by an Act of Congress in 1973 to help satisfy the demand for higher education in the capital, as well as to offer programs of study that reflect national priorities for education and research. Although many of its administrative and academic characteristics have been adapted from ANUIES recommendations, it is in some ways a unique institution.

The UAM programs of study are offered only at the undergraduate and graduate levels and were developed to meet the nation's need for professionals trained in certain practical or applied areas. *Licenciatura* programs in basic sciences and engineering have been emphasized. Even in the humanities and social sciences, programs are of a more practical nature. In some cases, areas of specialization within fields of study reflect both the emphasis on a practical orientation and an emphasis on much needed programs. For example, the field of law has three unusual or nontraditional areas of specialization, including penal and criminological sciences. See Table 14 for a complete list of *licenciatura* programs of study and areas of concentration offered by UAM.

Table 14

Divisions, Fields of Study, Areas of Concentration in the Three Units of the Universidad Autónoma Metropolitana/UAM (Autonomous Metropolitan University)

Division of Basic Sciences and Engineering (DCBI)	Azcapotzalco	Iztapalapa	Xochimilco
Biomedical Engineering			
Mathematics Applied to Medicine	–	x	–
Medical Instrumentation	–	x	–
Chemical Engineering			
Process Development & Design	–	x	–

Processes & Equipment	x*	–	–
Chemistry	–	x	–
Civil Engineering			
Construction	x*	–	–
Structures	x*	–	–
Electrical Engineering			
Electric Machines	x	–	–
Power Systems: Use & Control	x	–	–
Electronic Engineering			
Communications	–	x	–
Computation	–	x	–
Control & Instrumentation	x*	–	–
Digital Systems & Computers	x*	–	–
Engineering in Energy			
Geothermics	–	x	–
Nuclear Energy	–	x	–
Solar Energy	–	x	–
Systems	–	x	–
Thermodynamics	–	x	–
Environmental Engineering			
Air	x	–	–
Water	x	–	–
Hydraulic Engineering			
Geohydrology	–	x	–
Hydraulics	–	x	–
Hydraulic Systems	–	x	–
Hydrology of Canals	–	x	–
Industrial Engineering	x*	–	–
Mathematics			
Basic Mathematics	–	x	–
Mechanical Engineering			
Energy	x*	–	–
Mechanical Project	x*	–	–
Metallurgical Engineering	x	–	–
Physics Engineering			
Energy	x	–	–
Technology of Materials	x	–	–
Physics	–	x	–
Division of Social Sciences and Humanities (DCSH)			
Administration			
Administration of Public Companies	x*	x	–
Financial Administration	–	x	–
Financial Systems	x*	–	–
Industrial Promotion	x*	–	–
Private Administration	–	–	x
Public Administration	–	–	x
Economics	–	–	x
Applied Economics	x	–	–

(continued)

Economic Development & Planning	x	–	–
Political Economics	x	–	–
Economic Theory & Policy	–	x	–
Humanities			
History	–	x	–
Literature	–	x	–
Philosophy	–	x	–
Law			
Management of Administration & Public Finances	x*	–	–
Penal & Criminological Sciences	x*	–	–
Right of Work & Social Security	x*	–	–
Political Science	–	x	–
Psychology			
Educational Psychology	–	–	x*
Social Psychology	–	–	x*
Sciences of Communication			
Social Communication	–	–	x*
Social Anthropology			
Anthropology of Development	–	x	–
Anthropology of Education	–	x	–
Ethnology	–	x	–
Political Anthropology	–	x	–
Rural Anthropology	–	x	–
Sociolinguistics	–	x	–
Urban Anthropology	–	x	–
Social Psychology	–	x	–
Sociology			
Political Sociology	x	–	–
Rural Sociology	x	–	x
Sociology of Education	–	–	x
Sociology of Work	–	–	x
Urban Sociology	x	–	–

Division of Sciences and Arts for Design (DCAD)			
Architecture	–	–	x
Development	x	–	–
Planning	x	–	–
Realization	x	–	–
Design of Human Dwellings	–	–	x
Graphic Communications Design	–	–	x
Development	x	–	–
Planning	x	–	–
Execution	x	–	–
Industrial Design	–	–	x
Development	x	–	–
Planning	x	–	–
Realization	x	–	–

Division of Biological and Health Sciences (DCBS)			
Agronomy	–	–	x
Biological Pharmaceutical Chemistry	–	–	x
Biology			
Biology of Land Ecosystems	–	–	x
Botany	–	x	–
Ecology	–	x	x
Experimental Biology	–	x	x
Hydrobiology	–	x	x
Reproduction Biology	–	x	–
Zoology	–	x	–
Dentistry	–	–	x°
Foods Engineering	–	x	–
Industrial Biochemical Engineering	–	x	–
Medicine	–	–	x°
Nursing	–	–	x
Veterinary Medicine & Zootechnics	–	–	x

°Programs with limited enrollments.

SOURCE: *Instructivo de Primer Ingreso, Trimestre 80-0, Otoño de 1980 (Septiembre-Diciembre)*, Universidad Autónoma Metropolitana.

UAM has grown rapidly since its founding. In 1978-79, its enrollment reached 11,287.[26] Completion of an upper secondary program considered preparatory for higher education with a minimum grade average of 7 and an examination are required for admission. (See Chapter III, Programs of Study, in the Introduction to this chapter.) Limits on enrollment have been set in certain programs, especially those of a more traditional nature.

The organization of the university is based on a system of *unidades* (units), *divisiones* (divisions), and *departamentos* (departments). The university itself is physically composed of three separate units located at different sites in Mexico City: Unidad Azcapotzalco, Unidad Iztapalapa, and Unidad Xochimilco. Each unit includes three of the four possible academic divisions of the university: División de Ciencias Básicas e Ingeniería/DCBI (Division of Basic Sciences and Engineering), División de Ciencias Sociales y Humanidades/DCSH (Division of Social Sciences and Humanities); División de Ciencias y Artes para el Diseño/DCAD (Division of Sciences and Arts for Design); and División de Ciencias Biológicas y de la Salud/DCBS (Division of Biological and Health Sciences). (For the three divisions in each unit, see Table 14.) The programs of study offered in each division at each unit are organized into departments.

The presence of a division in more than one unit does not imply duplication of effort; each unit has its own distinct characteristics and style of academic organization and teaching methods. Even when the same divisions are included in more than one unit, the departments, fields of study, and areas of concentration within each field are usually different.

The academic calendar is the same for all three units at UAM. The school year,

26. *Tercer Informe de Gobierno, Sector Educativo, 1979*, p. 49.

which begins in September and ends in July, is divided into three periods, called *trimestres*. Although beginning and ending dates vary slightly each year, each *trimestre* is usually 12 weeks long. There is a five-week *periodo de verano*/PV (summer period), the use of which varies according to the needs of each UAM unit.

In each unit of UAM, the subject matter is organized into *unidades de enseñanza-aprendizaje* (units of teaching-learning). These units of teaching-learning may either be courses or *módulos* (modules). Each unit of teaching-learning is given a certain credit value in accordance with the ANUIES guidelines on the use of the credit system (2 credits per semester hour of academic or theoretical coursework; 1 credit per semester hour of practical or laboratory coursework). Programs of study vary from 12 to 15 *trimestres* in duration, including from 450 to 550 credits. Most programs of study in all the units progress from general to more specialized courses on three levels. The first level consists of courses in a *tronco común* (common core) or *tronco general* (general core). The second level is the *tronco básico profesional* (basic professional core). The third level is the *área de concentración* (area of specialization). The number of *trimestres* dedicated to each level varies. Sometimes courses from both the general core and the basic professional core are included in the fourth *trimestre*. Similarly, in the last *trimestres*, courses from the basic professional core as well as from the area of specialization may be included.

Despite these similarities, each administrative unit of UAM has a great deal of liberty in the development of its programs of study, and certain curricular differences have developed. Table 15 compares the program in administration at all three units. Azcapotzalco and Iztapalapa are the most similar to each other since their units of teaching-learning are actually courses. Azcapotzalco, however, utilizes the following teaching methods: lectures; seminars, round table discussions and research; and individualized learning systems. The individualized learning systems allow students to progress at their own rate through a series of units into which each course is divided. Iztapalapa emphasizes student participation, an interdisciplinary approach, and research projects directly related to the analysis and solution of real problems.

At Xochimilco, the curriculum is organized into *módulos* (modules). At UAM, the module is a unit of teaching-learning, similar to a course, but with broader scope. An entire *trimestre* is devoted to each module. In this system, students work in small groups, studying, discussing ideas, and carrying out research. The teacher acts as coordinator, guiding the group's work. Classwork includes seminars, laboratory work and fieldwork. It is felt that this method teaches students to actively participate and to work in teams.

Universidad Autónoma de Nuevo León/UANL
(Autonomous University of Nuevo León)

UANL's roots lie in a school founded by a Roman Catholic priest in 1702. After undergoing various transformations as a religious institution, in 1857 its religious affiliation ended and it became the Colegio Civil del Estado (Civil College of the State). In 1933 it became the Universidad de Nuevo León. When it was granted autonomy by the state government in 1971, "autonomous" was added to its name.[27]

The completion of an upper secondary program considered preparatory for higher education is required for admission to undergraduate programs at UANL. Students who have completed the upper secondary level qualification, *profesor* or *maestro* (teacher), may also be accepted for admission. Certain faculties may require specific prerequisite courses at the upper secondary level. Priority for admission is given

27. Audrey Reuben, *Institutional Report on the Universidad Autónoma de Nuevo León* (N.Y.: Institute of International Education, September, 1978).

Table 15

***Licenciatura en Administración* (Administration) in the Three Units of UAM**

Unidad Azcapotzalco				Unidad Iztapalapa				Unidad Xochimilco		
1. First Level—*tronco general*										
	trimestre	h/wk	cr		trimestre	h/wk	cr	*Modules*	trimestre	cr
Composition/Research Documentation I	1	4.5	9	Composition/Research Documentation I	1	4	8	Knowledge & Society	1	28
Math Appld. to Social Science	1	4.5	9	Intro. Formal Science	1	6	9			
Mexico: Economics, Politics & Society I	1	4.5	9	Mexico: Economics, Politics & Society I	1	4	8			
Pol., Soc. Doctrines I	1	4.5	9	Pol., Soc. Doctrines I	1	4	8			
Composition/Research Documentation II	2	4.5	9	Composition/Research Documentation II	2	4	8	History & Sociology	2	36
Math Appld. to Social Science	2	4.5	9	Mathematics I	2	6	9			
Mexico: Econ., Politics & Society II	2	4.5	9	Mexico: Econ., Politics & Society II	2	4	8			
Pol., Soc. Doc. II	2	4.5	9	Pol., Soc. Doc. II	2	4	8			
Mexico: Econ., Politics & Society III	3	4.5	9	Composition/Research Documentation III	3	4	8	Mexico: Economics, Politics & Society	3	36
Pol., Soc. Doc. III	3	4.5	9	Mathematics II	3	6	9			
				Mexico: Econ., Politics & Society III	3	4	8			
				Pol., Soc. Doc. III	3	4	8			
			90				99			100

(continued)

2. Second Level—*tronco básico profesional*

Intro. Econ. Theory	3	4.5	9
Quantitative Methods Appld. to Admin. I	3	7.5	15
Administration I	4	6	12
Macroeconomics	4	4.5	9
Microeconomics	4	4.5	9
Quantitative Methods Appld. to Admin. II	4	7.5	15
Administration II	5	7.5	15
Constitutional Regulation of Economic Activity in Mexico	5	6	12
Microeconomics II	5	4.5	9
Social Psychology & of Work	5	4.5	9
Distribution I	6	7.5	15
Institutions of Admin. & Tributary Law	6	4.5	9
Sociology of the Organization	6	4.5	9
Systems Analysis	6	4.5	9
Distribution II	7	4.5	9
Financial Inform.	7	6	12
Judicial Rules Over Work in Mexico	7	4.5	9
Operations Research I	7	6	12
Financial Planning & Control	8	6	12
Gov't. Process & Structure	8	4.5	9
Industrial Relations	8	6	12
Administration I	4	5	10
Intro. Macroeconomics	4	5	10
Intro. Microeconomics	4	5	10
Mathematics III	4	6	9
Administration II	5	6	12
Macroeconomics	5	5	10
Political Economics	5	5	10
Statistics I	5	6	9
Financial Inform. I	6	4	8
Law I	6	4	8
Operations Research I	6	6	9
Production Administration	6	5	10
Admin. of Distribution	7	5	10
Financial Inform. II	7	4	8
*Production Admin.	7	6	12
†Elective	7	–	–
Financial Admin.	8	5	10
Law II	8	4	8
*Admin. of Distribution	8	6	12
†Elective	8	–	–
Law III	9	4	8
Personnel Admin.	9	5	10
*Financial Admin.	9	6	12
†Elective	9	–	–
Law IV	10	4	8
*Personnel Admin.	10	6	12
†Elective	10	–	–
Administrative Auditing	11	4	8
*Research	–	16	20
*Higher Admin.	12	6	12

Production, Its Development, Fundamental Characteristics	4	36
Social Relations of Production	5	36
Regulation of Econ. System	6	36
Business & Its Environment	7	36
Organization, Its Structure & Function: Mgt. & Inform. Subsystems	8	36
Organization, Its Structure & Function: Finances and Human Resources Subsystems	9	36

Operations Rsch. II	8	4.5	9
Financial Admin.	9	7.5	15
Industrial Logistics	9	4.5	9
Mercantile Law Institutions	9	4.5	9
Public Companies	9	4.5	9
Admin. Auditing	10	4.5	9
Admin. for Development	10	4.5	9
Money & Capitals Mkt.	10	4.5	9
Strategic Planning	10	4.5	9
			318

3. Third Level—Areas of Concentration

Administration of Public Companies			
Internat'l. Commerce	11	4.5	9
Investment Projects	11	4.5	9
Program Budgeting	11	4.5	9
*Problems of Mexican Public Companies	11	4.5	9
Planning for Development	12	4.5	9
Public Finance	12	4.5	9
*Integration of States Industrial Conglomerates	12	4.5	9
*Multinat'l. Business	12	4.5	9
			72

Administration of Public Companies			
Public Administration I	10	6	11
Eval., Administration of Projects	11	6	11
Forms of State, Regimes of Gov't. (1)	11	4	8
Forms of State, Regimes of Gov't. (2)	12	4	8
Public Admin. II	12	6	11
Public Finance	12	6	11
			60

Public Administration		
State & Law, Case of Mexico	10	36
Pol. Structure, Gov't. Mgt., Bureaucracy	11	36
Organization, Functioning of Mexican Gov't. of Admin. Reform	12	36
		108

	297
	216

NOTE: UAM—Universidad Autónoma Metropolitana (Autonomous Metropolitan University)

*Indicates seminar.

†Students are required to take electives totaling 32 credits during the second level.

SOURCE: Curriculum from UAM. (mimeographed)

to applicants graduating from UANL's own upper secondary programs or from a program incorporated into the UANL. No student from another state is admitted if the desired program of study is also offered in an institution of that state.

UANL consists of 21 *facultades* (faculties), 15 of which offer studies through the graduate *(maestría)* level. Each faculty is free to develop its own plans of study. Thus, programs vary widely in organization and duration. The academic year, which generally begins in mid-September and ends in mid-July, is usually divided into two semesters approximately 18 weeks long. Some faculties offer summer courses; others combine the semester system with other divisions of the school year. The Faculty of Medicine employs a *cuatrimestre* system in the last year of its undergraduate program in medicine. The Faculty of Public Health's program in nutrition is organized in terms of *tetramestres*.

The duration of most *licenciatura* programs at UANL varies from 7 to 12 semesters. A few programs, such as industrial design in the Faculty of Architecture, and nursing in the Faculty of Nursing, use the credit system recommended by ANUIES (2 credits per semester hour of academic or theoretical coursework; 1 credit per semester hour of practical or laboratory coursework). (See Table 16.)

Table 16

***Licenciatura en Enfermería* (Nursing), UNAM, UANL**

UANL/Universidad Autónoma de Nuevo León (National Autonomous University of Nuevo León)				UNAM/Universidad Nacional Autónoma de México (National Autonomous University of Mexico)	
T = Theory	P = Practical		Cr = Credit		
First Semester	T	P	Cr	First Semester	Cr
Community Development	4	–	8	Anatomy & Physiology	22
Health Promotion	6	12	24	Ecology & Health	23
Nutrition	4	4	12	Intro. to Public Health	13
Physiological Biochem.	4	2	10	Scientific Method in Nursing	5
				Social Anthropology	4
				Statistics	4
Second Semester				Second Semester	
Biostatistics	4	4	12	Basic & Applied Nutrition	13
Community Nursing	6	12	24	Ethics	4
Microbiology & Parasitology	4	2	10	Foundations of Nursing	26
Social Sciences I	4	–	8	General Psychology	6
				Med. Tech. Etymologies	4
				Sociology	8
Third Semester				Third Semester	
Bioanthropology	3	–	6	Communication	6
Developmental Psychology	4	–	8	Developmental Psychology	4
Gyneco-Obstetrics I	4	2	10	Growth & Development	35
Maternal-Infant Nurs. I	4	18	26	Teaching Techniques	4
Pharmacology I	3	–	6		
Fourth Semester				Fourt. Semester	
Gyneco-Obstetrics II	2	2	4	Diet Therapy	8

Maternal-Infant Nurs. II	4	15	23
Pediatrics	3	2	8
Research Techniques I	4	–	8
Social Sciences II	3	–	6
Fifth Semester			
Pedagogy & Philos. of Ed.	4	–	8
Pharmacology II	3	–	6
Physiopathology I	4	–	8
Surgical Nursing	6	18	30
Sixth Semester			
Administration	4	–	8
Educational Technology	4	2	6
Physiopathology & Biochem.	4	2	10
Specialized Nursing	4	18	26
Seventh Semester			
Hospital Administration	5	18	28
Psych. Lab, Human Relations	4	–	8
Research Techniques II	4	–	8
Statistics	2	2	6
Eighth Semester			
Advanced Nursing	2	20	24
Nursing Education	4	10	18
Totals:	124	165	407
Courses:	32		

Pathology I	31
Pharmacology	8
Fifth Semester	
Pathology II	35
Principles of Admin.	4
Professional Ethics & Legislation	6
Sixth Semester	
Administration of Health Institutions	7
Pathology III	20
Pathology IV	20
Seventh Semester	
Administration of Nursing Service	13
Advanced Nursing	14
Gyneco-Obstetrics I	23
Eighth Semester	
Educational Technology	7
Gyneco-Obstetrics II	27
Nursing Systems	15
Thesis Seminar	5
Total:	424
Courses:	31

Source: *Carreras que imparte la U.A.N.L. y Planes de Estudio*, Universidad Autónoma de Nuevo León, Departamento Escolar y de Archivo (Monterrey: Imprenta Universitaria, 1980); *Planes de Estudio, Universidad Nacional Autónoma de México 1980*, Dirección General de Publicaciones (México, D.F.).

Simply by counting the number of courses, one may determine that programs may include from 32 to 63 courses, but fewer courses do not necessarily indicate fewer semesters. The undergraduate program in history is a 10-semester program which includes only 34 courses. Similarly, the total number of semester hours does not necessarily relate to the number of semesters. The 9-semester programs in agronomical-zootechnical engineering and public accounting consist of 315 semester hours and 225 semester hours, respectively; at the same time, the 10-semester programs in judicial sciences and behavioral analysis psychology consist of 187 and 196 semester hours, respectively. All of the *licenciatura* programs are considered equivalent and may lead to graduate education in Mexico.

A few faculties at UANL offer a common core of courses which are the same for all programs in the faculty. The Faculty of Agronomy's common core lasts only two semesters. The Faculty of Psychology's programs in behavioral analysis, child psychology, clinical psychology, labor psychology, and social psychology share a common core of courses through the sixth semester.

UANL does not offer any of the tertiary programs referred to as *carreras cortas* (short courses) or *salidas laterales* (lateral exits); however, it does offer one tertiary

program which is *not* designated as a *licenciatura* program. (See Degrees and Degree Requirements, this chapter.) The program leading to the intermediate degree of *instructor de artes visuales* (visual arts instructor) is offered in the Escuela de Artes Visuales (Visual Arts School). This program, which is said to be at the *nivel técnico superior* (higher technician level), consists of three semesters of study beyond completion of upper secondary school. Half of each semester is devoted to a workshop in visual experimentation. Other courses included in the program are didactics, esthetics, the history of culture, research organization and documentation, the sociology of art, and teaching methods. (See below.)

Examinations at UANL may be oral, written or practical, depending on the faculty. Grading is on a scale of 100 with 70 the lowest passing grade. (See Grading, this chapter.) Students who fail or miss the *examen ordinario* (final examination at the regularly scheduled time) have the right to four *exámenes extraordinarios* (extraordinary or make up examinations). A student who fails a course on the fourth attempt is suspended from the university. Even so, a student may continue to retake the failed final exams as many times as necessary. When all the failed exams have been passed, the student may be readmitted to the university. *Examenes a título de suficiencia* or *exámenes de capacidad* (ability examinations) are not a type of make up examination. Instead, they are tests to receive credit in courses not yet taken.

Degree requirements at UANL include a thesis, a professional examination, and a period of social service of no less than six months and no more than a year. Some faculties have incorporated thesis seminars into the degree plan, and in some faculties students may be allowed to substitute some graduate courses for the thesis. Nevertheless, only a small percentage of students actually finish their degrees. In 1978-79, there were 41,214 students enrolled at the undergraduate level; 1,910 of them received their degrees at the end of that school year.

Public State Institutions

Public state institutions in Mexico are created by state governments. Although funded primarily by the state itself, they also receive funds from the federal government. Since these institutions are not autonomous, the state governments generally name their administrative authorities. Each institution, however, determines its own academic programs and issues its own official *certificados* (transcripts) and *títulos* (degrees). (See Mexican Degrees and Qualifications, Chapter VI.)

There are two types of public state institutions: *universidades* (universities) and *escuelas normales superiores* (higher normal—teacher training—schools), but of all the institutions in this category only four are universities: the Universidad de Colima, the Universidad de Guadalajara, the Universidad de Guanajusto, and the Universidad Veracruzana.

The combined undergraduate enrollment for the four public state universities was 80,041 in 1977-78. The history and development of the universities is closely linked to that of the public autonomous institutions. All four have their roots in institutions founded in the 1800s or even earlier.

Like other institutions created around that time, public state universities patterned their programs of study after those of the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico). Most of the institutions in the public autonomous category were not founded as autonomous institutions, but were granted autonomy later. The fact that

the public state institutions have not been granted autonomy has not substantially affected their academic programs because they do have the freedom to develop their own programs of study.

All of the other public state institutions are higher teacher training schools. These schools have much in common with the other types of higher teacher training schools because Article 3 of the Mexican Constitution of 1917 gives the federal government extensive control over all kinds of teacher education. While public state universities are funded by and, to some extent, governed by the state government, they develop their own programs of study. Higher teacher training schools, on the other hand, generally follow the programs of study, grading scale, and calendar prescribed by the federal government. Still, each state government has considerable authority over its higher teacher training schools and, therefore, policies and programs of study do vary somewhat among states.

In the following sections, two public state institutions (one university and one higher teacher training school) are discussed in detail. All of the public state institutions are listed in Appendix C. For more information on teacher education, see Chapter VI.

DESCRIPTIONS OF UG AND THE ENS OF COAHUILA

Universidad de Guadalajara/UG (University of Guadalajara)

Founded in 1791 by decree of King Charles II, UG is the second oldest institution of higher education in Mexico. It has evolved into a university with both traditional and innovative characteristics. Although programs of study are offered in traditional, independent faculties, academic areas within the faculties are divided into departments, such as mathematics and physical sciences. All the programs of study in each faculty include courses in the various departments of the faculty. Faculties use the semester system more often than year-long courses or *trimestres*. *Salidas laterales* (lateral exits) from *licenciatura* programs (see Undergraduate Programs of Study, this chapter) are used extensively. Sometimes programs within the same faculty share a common core of courses for the first few semesters.

UG is composed of 13 faculties: Architecture, Chemical Sciences, Dentistry, Design, Economics, Engineering, Law, Medicine, Philosophy and Letters, Psychology, Public Accounting, Public Administration, and Veterinary Medicine and Zootechnics. The university also includes a Departamento de Enseñanza Preparatoria (Department of Upper Secondary Education) which offers an upper secondary program that combines general academic and vocational courses (see Chapter III). There are also several *escuelas* (schools). Most of these schools offer lower secondary or upper secondary instruction in a variety of fields including music, nursing, plastic arts and several industrial fields.

The Escuela de Agricultura (School of Agriculture), however, offers *licenciatura* programs only. The Escuela de Trabajo Social (School of Social Work) offers a technical upper secondary program as well as a *licenciatura* program. (The UG vocational upper secondary programs are discussed in Chapter III.)

The school year at UG officially begins in early September and ends in late August; however, summer vacation actually begins in mid-July. For faculties on the semester system, the fall semester ends in January and the spring semester begins in March.

Completion of one of the general or technical upper secondary programs considered preparatory for higher education is required for admission to UG's undergraduate programs. (See Chapter III.) In the School of Social Work, completion of the vocational upper secondary program may allow students to enter the *licenciatura* program in social work, perhaps even with some advanced standing credit.

Licenciatura programs at UG range in length from two and one-half to six years (5 to 12 semesters), but most programs require four to five years (8 to 10 semesters). Programs include as few as 135 and as many as 407 total semester hours, and there is no correlation between the number of semester hours and the number of semesters. For example, the *licenciatura* programs in law and mechanical electrical engineering are both five years (10 semesters) in length. The engineering program includes 407 semester hours while the law program includes only 175. Furthermore, the four-year (8-semester) *licenciatura* program in dentistry includes more semester hours (263) than some 9- or 10-semester programs. Table 17 compares three UG undergraduate programs.

Table 17

Comparison of *Licenciatura* Programs, Universidad de Guadalajara/UG (University of Guadalajara)

Letras (Letters)		*Ingeniería Mecánica Eléctrica* (Mechanical Electrical Engineering)		*Ingeniería Topográfica* (Topographical Engr.)	
First Year	h/wk	First Semester	h/wk	First Semester	h/wk
Foreign Language I & II	4	Advanced Algebra	5	Differential Calculus	5
Intro. to Philos. I & II	6	Analytical Geometry	5	Drawing I	5
Intro. to Scientific Research I & II	6	Drawing I	5	Intro. to Civil Engineering	3
Social Hist. of Literature & Literature Workshops I & II	6	Human Behavior in Organizations	5	Modern Algebra	5
Elective	3	Mathematics I	5	Plane Geometry & Trigonometry	5
		Plane & Spherical Trigonometry	5	Topography	6
		Plane Geometry	5		
		Second Semester		Second Semester	
		Admin. Techniques I	5	Complements of Topography	6
		Computer Languages	7	Drawing II	5
		Drawing II	7	Human Behavior in Organizations	3
		General Topography	6	Integral Calculus	5
		Linear Algebra & Mathematical Programming	5	Solid Geometry	5
		Mathematics II	5	Statics	5
		Statics	5		
		salida lateral: dibujante técnico°			
Third Semester		Third Semester		Third Semester	
Greek-Latin Etymologies I	2	Admin. Techniques II	5	Astronomy of Position & Practice	6
Linguistics	3	Chemistry	5	Cartography	3
		Dynamics	5		

Literary Precepts & Theory	3
Methodology of Literary Analysis & Workshop	3
Modern Foreign Language	4
Spanish I	3
Elective	3

Electricity & Magnetism	7
Mathematics III	5
Numerical Methods	7
Vector & Tensor Calculus	5

Mathematics III	5
Physics I	5
Probabilities & Errors I	3
Topography I	8

Fourth Semester	
Greek-Latin Etymol. II	2
Methodology of Literary Analysis & Workshop	3
Modern Foreign Language	4
Poetry & Stylistic Problems	3
Semiology	3
Spanish II	3
Elective	3

Fourth Semester	
Applied Mechanics I	5
Circuits I	7
Materials Science	5
Mathematics IV	5
Mechanics of Solids	5
Optics & Acoustics	7
Probability & Statistics	5
Thermodynamics	5

Fourth Semester	
Geology	3
Hydrographics	3
Hydrology & Hydrometrics	3
Photogrammetry	4
Probabilities & Errors II	3
Topography II	8

*salida lateral: auxiliar de programador de computadoras**

Fifth Semester	
Comparative Literature I	3
Elements of Ancient & Contemporary Dramatics	3
History of Greek Philos.	3
Mass Communications Seminar: Literature in Context of Art	2
Elective	3

Fifth Semester	
Applied Mechanics II	7
Circuits II	7
Electromagnetic Theory	5
Fluid Mechanics I	6
Lighting	5
Mathematics V	5
Mechanics of Materials I	5
Thermal Engineering I	7

Fifth Semester	
Land Placement *(Geodesia)*	3
Localization & Design of Roads	4
Photointerpretation	3
Topography III	10
Topography of Mines	5

Total:	137
Courses:	29

Sixth Semester	
Comparative Literature II	3
Nahautl Language	3
Prehispanic & Hispanic American Literature to the 18th Century	3
Prehispanic History of America	2
Seminar: Spanish Lit.	2

Sixth Semester	
Electric Machines I	7
Electronics I	7
Fluid Mechanics II	6
Mechanical Installations	5
Mechanics of Materials II	6
Metrology	7
Process of Manufacture	7

(continued)

Elective	3

Thermal Engineering II	7

*salida lateral: auxiliar de diseñador electro-mecánico**

Seventh Semester	
Comparative Lit. III	3
Economics & Latin American Society	2
Hispanic American Literature of 19th Century	3
History of Mexican Revolution	2
Mexican Revolution in the Novel	2
Spanish Literature 18th to 20th Century	3
Elective	3

Seventh Semester	
Control I	5
Design of Machine Elements I	5
Electric Machines II	6
Electrical Industrial Installations	5
Electronics II	7
Fluid Mechanics III	7
Thermal Engineering III	7
Transmission Lines	5

Eighth Semester	
Economics & Latin American Society	2
Hispanic American Literature of 20th Century	3
Mexican Drama & Essay	3
Seminar: Latin American Narrative	2
Seminar: Latin American Poetry	2
Seminar: Literature of Jalisco	2
Elective	3

Eighth Semester	
Control II	7
Design of Machine Elements II	5
Electric Machines III	6
Electric Power Systems	5
Fluid Mechanics IV	7
Substations of Power	5
Thermal Engineering IV	7

*salida lateral: auxiliar de ingeniero mecánico electricista**

Ninth Semester	
Pedagogy	3
Seminar: Language Translation	3
Seminar: Thesis	3

Ninth Semester	
Communication	5
Distribution Networks	5
Electric Centrals	5
Machine & Electrical Apparatus Controllers	5
Protection of Electric Power Systems	5
Servomechanism	7
Thermal Engineering V	7

Total:	141
Courses:	51

Tenth Semester	
Industrial Engineering Elements	5
Legislation	5
Operation of Electric Power Systems	5
Projects of Electric Centrals	5
Seminar: Mechanical Engineering	4
Total:	407
Courses:	72

SOURCE: *Guía Académica 1979 Universidad de Guadalajara.*
*Intermediate degree awarded; see Table 18.

Several faculties at UG have organized their programs of study around a common core of courses, which may encompass from two to six semesters. For example, the first four semesters of the Public Administration Faculty's 10-semester *licenciatura* programs in public administration and business administration are the same. The School of Agriculture offers a single five-year *licenciatura* program in agricultural engineering with specializations in phytotechnics, agricultural extension, cattle ranching, and soils. The first three years are common to all four specializations.

Many faculties and schools have established *salidas laterales* (lateral exits) from their *licenciatura* programs. Students do not enter directly into programs leading to lateral exits but rather elect to take a lateral exit and receive an intermediate degree when unable to complete the entire undergraduate program (with the hope that an intermediate degree will facilitate entry into the work force). Most programs have only one lateral exit, but some have established several. Although at other institutions lateral exits usually occur following one or two years of study, at UG the length of programs leading to lateral exits varies as much as from two to eight semesters. (See Table 18 for a complete list of lateral exits from *licenciatura* programs.)

Table 18

Lateral Exits from *Licenciatura* Programs, Universidad de Guadalajara/UG

Intermediate Degrees Awarded	Number of Semesters	Semester Hours	*Licenciatura* Program
Auxiliar Administrativo (administrative assistant)	4	–	Public Administration 10 sems; 230 sem hrs
Auxiliar de Diseñador Electromecánico (Electromechanical design assistant)	6	255	Mechanical Electrical Engineering 10 sems; 407 sem hrs
Auxiliar de Diseñador Mecánico (mechanical design assistant)	6	209	Industrial Engineering 10 sems; 350 sem hrs

(continued)

Auxiliar de Ingeniero Mecánico Electricista (mechanical electrical engineering assistant)	8	344	Mechanical Electrical Engineering 10 sems; 407 sem hrs
Auxiliar de Metalurgista (metallurgy assistant)	4	135	Industrial Engineering 10 sems; 350 sem hrs
Auxiliar de Producción (production assistant)	8	287	Industrial Engineering 10 sems; 350 sem hrs
Auxiliar de Programador de Computadoras (computer programming assistant)	4	156	Mechanical Electrical Engineering 10 sems; 407 sem hrs
Auxiliar en Desarrollo de la Comunidad (Assistant in community development)	7	230	Architecture (Theory & Humanities) 10 sems; 312 sem hrs
Auxiliar en Diseño Arquitectónico (architectural design assistant)	8	254	Architecture (Design) 10 sems; 299 sem hrs
Auxiliar en Diseño Urbano (assistant in urban design)	8	255	Architecture (Urban Planning) 10 sems; 299 sem hrs
Auxiliar en Edificación (construction assistant)	8	254	Architecture (Construction) 10 sems; 298 sem hrs
Ayudante de Residente de Obras (project foreman assistant)	4	117	Civil Engineering 10 sems; 261 sem hrs
Calculista Asociado (associate appraiser)	8	215	Civil Engineering 10 sems; 261 sem hrs
Dibujante Técnico (draftsman)	2	73	Mechanical Electrical Engineering 10 sems; 407 sem hrs
Dibujante Técnico (draftsman)	2	60	Industrial Engineering 10 sems; 350 sem hrs
Residente de Obras (project foreman)	6	168	Civil Engineering 10 sems; 261 sem hrs
Técnico en Turismo (technician in tourism)	6	180	Tourism 10 sems; 281 sem hrs

SOURCE: *Guía Académica 1979 Universidad de Guadalajara.*

Some of the programs leading to lateral exits actually include more semester hours than some complete undergraduate programs. (See Table 17 for a comparison of three undergraduate programs.) It will be seen that the complete 9-semester undergraduate program in letters comprises fewer semester hours than any of the last three lateral exits from the mechanical electrical engineering program. Even within the Faculty of Engineering, there is a complete undergraduate program in topographical engineering that comprises fewer semesters and fewer semester hours than many of the established lateral exits in the same faculty.

Each university is responsible for designating its programs as full *licenciatura* programs or as short programs. The three programs in Table 17 are indeed designated as full undergraduate programs while the lateral exits are not.

Licenciatura degree requirements at UG generally include a period of social service, a thesis, and a professional examination. In some faculties, the social service or thesis, or both, have been incorporated into the class hours of the program. Since a thesis and social service are required in all programs, the practice of devoting semester hours to their completion makes some programs seem longer than others in terms of both semester hours and number of semesters. For example, in the Faculty of Design, the entire ninth semester (10 semester hours) is devoted to the thesis.

Escuela Normal Superior/ENS/del Estado de Coahuila (Higher Normal—Teacher Training—School of the State of Coahuila)

Founded in 1944 by decree of the state congress, this institution, like the other higher normal schools, trains teachers for the nation's *escuelas secundarias* (lower secondary schools) and *escuelas normales* (teacher training at upper secondary level). Six *licenciatura* programs are offered: educational psychology, English, mathematics and physics, natural sciences, social sciences, and Spanish language and literature. These fields reflect the current organization of the lower secondary school curriculum. (See Chapter II.) All six programs are four years in length and include from 28 to 35 year-long courses.

Admission to the school requires either completion of an upper secondary program considered preparatory for higher education or the upper secondary teaching qualifications, *profesor* or *maestro* (teacher). (See Chapter III for a description of both upper secondary programs.) An entrance examination is also required.

All the programs are offered in two "modes," oral and mixed. The oral mode, termed *curso oral* (oral course), is for students who are able to attend class fulltime. The mixed mode, referred to as the *curso mixto correspondencia e intensivo* (mixed course—intensive and by correspondence) is for working teachers who have never earned a *licenciatura* from a higher normal school.

In the oral mode, the school year begins in September and ends in June, and courses are year-long. For grading purposes, however, the year is divided into two halves. Examinations are held twice yearly, in January and June. In each course, partial examination grades for the first half of the year are averaged with the grade of the January examination. Similarly, partial examination grades for the second half of the course are averaged with the grade on the June final examination. These two averages are then averaged to determine the final grade. Professors may exempt students with an average of 9 from the final exam. In order to have the right to take the final exam, students are required to have at least 80% attendance. Students who fail or miss the final exam may take an EER/*examen extraordinario de regularización* (extraordinary or make up examination of regularization).

The mixed mode is also year-long, but the year begins in September and ends in August, and from September to June students take courses by correspondence. An intensive program at the Higher Normal School takes place during July and August. The final grade for each class takes into consideration a final exam grade as well as grades on the correspondence lessons; however, the student must pass the final exam in order to pass a course. In order to have the right to take the final exam, students must have sent in at least 70% of the correspondence lessons and have 80% attendance in the intensive classes.

Degree requirements at ENS include a thesis and a professional exam. In accordance with recommendations of the Secretaría de Educación Pública/SEP (Ministry of Educa-

tion), the following three alternatives to the thesis have been established: a report on a period of practice teaching carried out during the third and fourth years of the program, a comprehensive exam on knowledge acquired during the four-year program, or publication of a work related to the undergraduate program. Regardless of the alternative chosen, all students must take and pass the thesis seminar course.

Grading is based on a scale of 4 to 10 with 6 the lowest passing grade. (See Grading, this chapter.) The institution furnished the following information on grade distributions. Of the 50% of the students who finish their programs, 1.5% do so with an overall average of 6, 5% with an average of 7, 40% with an average of 8, 45% with an average of 9, and 8.5% with an average of 10.

All of the faculty at ENS have *licenciatura* degrees. Eight percent are fulltime, 29% are part-time, and 62% teach on an hourly basis.

Institutions Dependent on the Federal Government

The approximately 100 Mexican institutions created, funded and, to varying degrees, controlled by the federal government comprise the largest category, numerically, of public institutions of higher education in the country.

Many of these institutions, referred to hereafter as federal institutions, are administered by the Secretaría de Educación Pública/SEP (Ministry of Education). However, several other ministries also administer institutions; among these are the Secretaría de Agricultura y Recursos Hidráulicos/SARH (Ministry of Agriculture and Water Resources), the Secretaría de Comunicaciones y Transportes/SCT (Ministry of Communications and Transportation), the Secretaría de la Defensa Nacional/SDN (Ministry of National Defense), and the Secretaría de Salubridad y Asistencia/SSA (Ministry of Health and Welfare).

The SEP does not determine the academic policies of institutions administered by other ministries; however, it does serve other ministries in an advisory capacity and has some influence over their programs of study. Also, the other ministries are expected to coordinate their programs of study with those of SEP institutions and to keep the SEP informed of changes in their programs, although some ministries, such as the SDN, are quite independent from the SEP.

None of the institutions in this category have been granted formal autonomy from the federal government; however, their academic freedom is considered inviolable. (See Autonomy, earlier in this chapter.) And even within this category, some institutions are more independent than others. Certain federal institutions, especially within the SEP, have been granted a special kind of status, that of *descentralizada* (decentralized) or *desconcentrada* (deconcentrated). For example, the Instituto Politécnico Nacional/IPN (National Polytechnic Institute) and the Universidad Pedagógica Nacional/UPN (National Pedagogical University) have been granted the status of *desconcentrada* which removes them somewhat from the direct control of the SEP. Other federal institutions such as the Centro Nacional de Enseñanza Técnica Industrial/CeNETI (National Center of Technical Industrial Education) are referred to as *decentralizada*, which affords even more independence. These institutions may actually administer other federal institu-

tions, and they also may have the authority to incorporate programs of study of private institutions.

Although each federal institution has the authority to issue official *constancias* (temporary transcripts or other documents), the *certificados* (transcripts) and *títulos* (degrees) are issued generally by the ministry that administers the institution. This general rule may vary, however, with the degree of independence of the individual institution.

These federal institutions are difficult to characterize in general terms; most were created by the federal government to fill a specific need such as training teachers for technical education, fine arts, and other specialized areas. Because of the more specific nature of their programs of study, few of these institutions are called universities. Instead they may be called *centros* (centers), *colegios* ("colleges"), *escuelas* (schools), or *institutos* (institutes).

Institutions of national importance and prestige as well as smaller, less well known institutions are included in this category. The same contrast between institutions in large urban areas and those in other states that was discussed in the section on public autonomous institutions also exists among federal institutions. In fact, it might be argued that a national federal institution such as IPN, which is one of the principal institutions in this category, has more in common with UNAM, a member of the public autonomous category, than with the other institutions of its group. Similarly, small federal institutions in the states, such as the ITRs, have more in common with the small institutions in the public autonomous or public state categories than they do with the IPN.[28] While it is true that national universities in both categories have easier access to well-qualified professors, all federal institutions are generally well equipped and well funded.

Despite the diversity of the institutions dependent on the federal government, certain generalizations can be made. Due to the influence of the federal government, the institutions reflect national priorities in terms of fields of study, geographic area to be served, and curricular organizations and innovation. Many institutions which specialize in technical education have been created to fill the nation's need for professionals in technical areas. Institutions have been established outside Mexico City to extend educational opportunities in the states, another federal priority. Some institutions have adopted a semester system, a flexible study plan, and a system of credits and have provided for lateral exits from their degree programs. Because the federal government would like to separate upper secondary education from university dominance, relatively few of the federal institutions of higher education offer upper secondary programs.

To generalize even further, many federal institutions utilize the SEP's official calendar, which begins in September and ends in June. Grading in federal institutions does vary, but many institutions use the grading system established by SEP agreement Number 17 in 1978, which is based on a scale of 10 with 6 the lowest passing grade.

To discuss the federal institutions in greater detail, it is useful to first

28. Castrejón Diez, p. 10.

subdivide those dependent on the SEP into the following *smaller groups:* technical institutions (the largest group), including several single institutions as well as an entire system of what are referred to here as federal technical institutes; teacher training institutions; institutions which specialize in fine arts education; and a few institutions that do not fit into any of the other three groups. In addition to those dependent on the SEP, there are the institutions dependent on other federal ministries.

INSTITUTIONS DEPENDENT ON THE SEP

Technical Institutions Dependent on the SEP

Technical education in Mexico is much younger than education in public autonomous or state universities. Rather than dating to colonial times as do a few of the universities, technical education has its roots in the nineteenth century. At that time, President Benito Juárez created the Escuela de Artes y Oficios (School of Arts and Trades) to bring Mexicans up to date with the Industrial Revolution. Later, the Escuela de Artes y Oficios was transformed into the Escuela Práctica de Ingenieros Mecánicos y Electricistas (Practical School of Mechanical and Electrical Engineers) which, together with the Escuela Superior de Comercio y Administración (Higher School of Commerce and Administration), is considered to be the foundation of technical education in Mexico today.

As the industrial needs of the nation grew, so did the need for technical education. In 1937, the system of technical education was solidified by the creation of the Instituto Politécnico Nacional/IPN (National Polytechnic Institute). IPN began by offering lower secondary and upper secondary education, as well as higher education. In 1969, the lower secondary schools were separated from IPN.[29]

The system referred to here as federal technical institutes has its origins in the Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes) which were established in Durango in 1948 and in Chihuahua in 1949 as extensions of the IPN outside Mexico City. They were founded, in part, to decentralize industrial technical education by extending it to the states. Until 1959 there were seven ITRs which offered mainly lower and upper secondary education as well as *capacitación para el trabajo* (vocational training). In 1959, the federal system of technical education was reorganized, and the ITRs were removed from IPN control to be administered directly by the SEP. Soon after, the ITRs stopped offering lower secondary education and work training and began to offer higher education. In the 1970s, there was an expansion of the technical system, and by 1976, the number of ITRs had reached the current total of 48, more than double the number in 1970.

Also in the 1970s, the federal government began to look beyond industrial education to other technical areas in need of development. In 1973, the first

29. *Ibid.*, pp. 298-301.

of several Institutos Tecnológicos Agropecuarios/ITA (Technological Agricultural Institutes) was established. This system of federal agricultural institutions has grown and diversified. Today, there are 17 ITAs; one institution that specializes in forestry, the Instituto Tecnológico Forestal/ITF (Technological Forestry Institute); and one institution that specializes in teacher training for agricultural schools, the Instituto Superior de Educación Tecnológica Agropecuaria/ISETA (Higher Institute of Technological Agricultural Education).

In the area of fishing and ocean sciences, the Centro Nacional de Ciencias y Tecnologías Marinas (National Center of Marine Science and Technology), founded in 1967, was a federal institution dependent on a different subdivision of the SEP than the other technical institutions mentioned. In 1977, its name was changed to the Instituto de Estudios Superiores en Ciencias y Tecnología del Mar/IESCITEM (Institute of Higher Studies in Ocean Sciences and Technology), and it joined the system of technical institutes in the states which includes the ITRs, the ITAs, the ITF, and the ISETA.

There are other federal technical institutions that are not considered part of the ITR, ITA, etc., system. For example, the Centro Nacional de Enseñanza Técnica Industrial/CeNETI (National Center of Technical Industrial Education) is a decentralized institution that belongs to its own system, which includes two Centros Regionales de Enseñanza Técnica Industrial/CeRETI (Regional Centers of Technical Industrial Education). Also, the Instituto Tecnológico Superior de Gerencia Ejidal (Higher Technological Institute of Common Land Management) is a unique federal institution which does not fit into any of the categories of federal technical institutions.

Instituto Politécnico Nacional/IPN (National Polytechnic Institute)

IPN offers programs of study at the upper secondary, undergraduate, and graduate levels. In 1979-80, 85,670 undergraduate students were enrolled.[30] Even though programs of study at the undergraduate level correspond to one of four general areas of knowledge—engineering and exact sciences, medical and biological sciences, social sciences, and interdisciplinary studies—most programs are in engineering or the health sciences. In the area of social sciences, programs in business administration, economics, and tourism are offered. In accordance with its "polytechnic" nature, no programs in the humanities are offered.

The first three of these broad areas of knowledge also exist at the upper secondary level as areas of concentration, although the name of the engineering and exact sciences area at the upper secondary level is physical sciences and mathematics. (See Chapter III, Vocational Secondary Education.) To be admitted to an undergraduate program in one of these three areas, students should have completed an upper secondary program considered preparatory for higher education with a concentration in the corresponding area. The upper secondary concentration required to enter interdisciplinary undergraduate programs depends on the field of study. It is possible for students to be admitted to a program in an undergraduate area which does not cor-

30. Student enrollment figures for the section on Technical Institutions Dependent on the Ministry of Education are taken from SEP's *Estadística Básica del Sistema Nacional de Educación Tecnológica*, p. 9.

respond to their upper secondary concentration by taking additional upper secondary level courses.

Graduates of IPN's three-year upper secondary program (see Chapter III) are accorded automatic access to programs at the undergraduate level. At one time, IPN's upper secondary program consisted of a two-year *vocacional* (technical university preparatory) program plus an additional optional one or two years of courses in a technical specialization (see Chapter III).

Students who have completed only the two-year *vocacional* program may now be required to take one or two additional technical courses before beginning their *licenciatura* programs. Applicants who have completed both the *vocacional* program and the additional one or two years of courses in a technical specialization are admitted to the first year of undergraduate study without advanced standing. The only *licenciatura* program which requires an examination for entry is that in tourism, which requires an English exam of all applicants and an entrance exam of those who do not have the upper secondary qualification, *técnico en administración de empresas turísticas* (technician in tourist business administration).

Structure of IPN. IPN programs are offered in 14 academic divisions called *unidades* (units), *centros* (centers), and *escuelas* (schools), some of which are organized on the basis of academic departments. Most of these divisions are located at various sites within the Federal District, e.g., the Unidad Profesional de Zacatenco. One of them, however, the Centro Interdisciplinario de Ciencias Marinas (Interdisciplinary Center of Marine Sciences), is located in the city of La Paz, Baja California Sur.

The divisions offer *licenciatura* programs in the four areas as follows:

Engineering and Exact Sciences—the Escuela Superior de Física y Matemáticas (Higher School of Physics and Mathematics); the Escuela Superior de Ingeniería Mecánica y Eléctrica (Higher School of Mechanical and Electrical Engineering); the Escuela Superior de Ingeniería Química e Industrias Extractivas (Higher School of Chemical Engineering and Extractive Industries); the Escuela Superior de Ingeniería Textil (Higher School of Textile Engineering); the Escuela Superior de Ingeniería y Arquitectura (Higher School of Engineering and Architecture).

Medical and Biological Sciences—the Escuela Nacional de Ciencias Biológicas (National School of Biological Sciences); the Escuela Nacional de Medicina Homeopática (National School of Homeopathic Medicine); the Escuela Superior de Medicina (Higher School of Medicine).

Social Sciences—the Escuela Superior de Comercio y Administración (Higher School of Commerce and Administration); the Escuela Superior de Economía (Higher School of Economics); the Escuela Superior de Turismo (Higher School of Tourism).

Interdisciplinary Studies—the Centro Interdisciplinario de Ciencias de la Salud (Interdisciplinary Center of Health Sciences); the Centro Interdisciplinario de Ciencias Marinas (Interdisciplinary Center of Marine Sciences); the Unidad Profesional Interdisciplinaria de Ingeniería y Ciencias Sociales y Administrativas (Professional Interdisciplinary Unit of Engineering and Social and Administrative Sciences). These centers and this unit, founded since 1971, are the most recent IPN additions.

Programs of Study. Most of the courses of study within IPN are organized according to semesters, with *licenciatura* programs ranging in length from 6 to 10 semesters. The duration of programs can also be measured in terms of semester hours. Viewed in this way, the total number of semester hours for IPN *licenciatura* programs varies from 150 to almost 400. A program's total number of semester hours is not always consistent with the number of semesters, however, and this variability exists within schools as well as among schools and even within fields of study. The Higher School of Engineering and Architecture, for example, offers four 10-semester *licenciatura* programs in engineering. Each one includes the equivalent of at least 238 semester hours.

The school also offers an 8-semester *licenciatura* program in geophysical engineering and a 6-semester *licenciatura* program in topographical and photogrammetrical engineering. The difference between the 8-semester and the 6-semester programs is fewer than 10 semester hours: the 8-semester program is 200 semester hours in length, the 6-semester program, 190.5. In contrast, the *licenciatura* program in engineering at IPN's Higher School of Chemical Engineering and Extractive Industries offers two 9-semester *licenciatura* programs in chemical industrial engineering and petroleum chemical engineering, which are comprised of more than 300 semester hours each. On the other hand, there is an 8-semester *licenciatura* program in transportation engineering in IPN's Professional Interdisciplinary Unit of Engineering and Social and Administrative Sciences, which consists of only 172 semester hours. (See Table 19 for a comparison of three engineering programs.)

The only IPN school that actually uses a system of credits is the Higher School of Physics and Mathematics. In this case, the value of the credit differs from that suggested by the ANUIES guidelines (discussed earlier in this chapter) in that each semester hour is equal to 1 credit.

Some schools have a core of courses common to all or some of the programs offered in the school. For example, in the Higher School of Tourism at IPN, specializations in hotel science, travel agencies, means of transportation, and tourist planning and development all share a 4-semester common core of courses. And in IPN's Professional Interdisciplinary Unit of Engineering and Social and Administrative Sciences, such varied *licenciatura* programs as computer science, industrial administration, and industrial engineering share a 5-semester common core of courses.

Although most IPN curriculums are fixed, electives are sometimes allowed, usually in the last few semesters. The choice of electives often leads to a specialization within a program of study. Most of the *licenciatura* programs in the Higher School of Mechanical and Electrical Engineering offer several subspecializations or areas of concentration in the final year. For example, electives offered in the eighth and ninth semesters of the aeronautical engineering program allow students to specialize in either aerodynamics, structures, or thermics. The Higher School of Physics and Mathematics offers a single *licenciatura* program which emphasizes either mathematics or physics, depending on the electives chosen.

Table 19

Comparison of Three Engineering Programs, Instituto Politécnico Nacional/IPN (National Polytechnic Institute)

Ingeniero Arquitecto (Architectural Engr.)		*Ingeniero Topógrafo y Fotogrametrista* (Topographical & Photogrammetrical Engr.)		*Ingeniero en Transporte* (Transportation Engr.)	
First Semester	h/wk	First Semester	h/wk	First Semester	h/wk
Architecture Theory & Building Analysis I	3.0	Drawing	3.0	Constitutional & Administrative Law	3
Graphic Expression Workshop I	3.0	Geology I	3.0	Drawing	3
Intro. Architect. Composition I	7.5	Learning Techniques	3.0	Intro. to Transport. Engr.	3
		Mathematics I	4.5	Mathematics I	4
		Physics I	4.5		
		Topography I	9.0		

(continued)

Materials & Install. I	4.5	Seminar: Educational Orientation	2.0	Oral & Written Communication	3
Structures I	6.0			Sociology	3
Topography I	3.0			Vector Analysis	4
Second Semester		**Second Semester**		**Second Semester**	
Architect. Theory & Bldg. Analysis II	3.0	Geology II	3.0	Analysis of Operations of Means of Transportation I	4
Graphic Expression Workshop II	3.0	Mathematics II	4.5	Computers & Methods of Computation	3
Intro. Architect. Comp. II	7.5	Nomography	3.0	Cost Accounting	4
Materials & Install. II	4.5	Physics II	4.5	Mathematics II	4
Structures II	6.0	Prin. of Economy & Organization	3.0	Physics I	4
Topography II	3.0	Topography II	9.0	Transportation Law	3
Third Semester		**Third Semester**		**Third Semester**	
Architect. Comp. I	7.5	Astronomy of Position I	8.5	Anal. Oper. Means of Transportation II	4
Architect. Theory & Bldg. Analysis III	3.0	Hydraulics	3.0	Mathematics III	4
Costs & Installations I	2.0	Mathematics III	4.5	Mechanics I	4
Costs & Materials I	3.0	Photogrammetry I	4.5	Physics II	4
Geology I	2.0	Statistics	3.0	Prouability & Stats. I	4
Graphic Expression Workshop III	3.0	Topography III	9.0		
Structures III	6.0	Seminar: Human Relations	2.0		
Fourth Semester		**Fourth Semester**		**Fourth Semester**	
Architect. Comp. II	7.5	Astronomy of Pos. II	8.5	Economics	4
Architect. Theory & Bldg. Analysis IV	3.0	Hydromeasure	3.0	Intro. Administration	3
Costs & Installations II	2.0	Legal Topography	3.0	Mechanics II	4
Costs & Materials II	3.0	Mathematics IV	4.5	Operations Research I	3
Graphic Expression Workshop IV	3.0	Photogrammetry II	6.0	Probability & Stats. II	4
Soil Mechanics I	2.0	Topography IV	9.0	Topography & Photogrammetry	4
Structures IV	6.0	Seminar: Resources & Needs of Country	2.0	Transportation Engr. I	3
Fifth Semester		**Fifth Semester**		**Fifth Semester**	
Architect. Comp. III	7.5	Geodesics I	8.5	Admin. Process	3
Architect. Theory & Urban Studies I	3.0	Hydrology	3.0	Applied Statistics	3
Costs & Installations III	2.0	Highways	4.5	Econ. of Transport.	3
Costs & Materials III	3.0	Photogrammetry III	7.0	Elements of Construct.	3
Graphic Expression Workshop V	3.0	Probabilities Calculus & Errors Theory I	4.5	Fluids Transportation	3
Soil Mechanics II	2.0	Subterranean Topography	3.0	Operations Research II	4
Structures V	6.0	Seminar on Electronic Computation	2.0	Transport. Flow Theory	4
Sixth Semester		**Sixth Semester**		**Sixth Semester**	
Architect. Comp. IV	7.5	Cartography	4.5	Admin. Process II	3

Architect. Theory & Urbanism II	3.0
Costs & Installations IV	2.0
Costs & Materials IV	3.0
Graphic Expression Workshop VI	3.0
Soils Mechanics III	2.0
Structures VI	6.0

Seventh Semester

Architect. Comp. V	7.5
Architect. Laboratory I	2.0
Architect. Theory & Urbanism III	3.0
Costs & Installations V	2.0
Costs & Materials V	3.0
Graphic Expression Workshop VII	3.0
Structures VII	6.0

Eighth Semester

Architect. Comp. VI	7.5
Architect. Laboratory II	2.0
Architect. Theory & Urbanism IV	3.0
Costs & Installations VI	2.0
Costs & Materials VI	3.0
Graphic Expression Workshop VIII	3.0
Structures VIII	6.0

Ninth Semester

Architect. Comp. VII	7.5
Costs & Installations VII	2.0
Costs & Materials VII	3.0
Graphic Expression Workshop IX	3.0
Structures IX	6.0
Urban Studies I	3.0

Tenth Semester

Architect. Comp. VIII	7.5
Costs & Installations VIII	2.0
Costs & Materials VIII	3.0
Geodesics II	8.5
Hydrography	4.5
Photointerpretation	6.0
Probabilities Calculus & Errors Theory II	3.0
Seminar: Interpretation of Geographic Maps	2.0
Elective	3.0

Automobile Mechanics	3
Econ. of Engineering	4
Methodology of Engr.	3
Soil Mechanics in Highway Engr.	4
Transportation Engr. II	4

Seventh Semester

Administration of Fleets & Terminals	3
Operations Research III	3
Plant Distribution	3
Structures	4
Urban & Regional Planning	3
Urban Transportation	3

Eighth Semester

Air Transport. Engr.	3
Land Transport. Engr.	3
Naval Transport. Engr.	3
Transport. Models	4
Urban Transport. Engr.	3
Degree Seminar	3

(continued)

Graphic Expression Workshop X	3.0				
Structures X	6.0				
Urban Studies II	3.0				
Total:	262.0	Total:	190.5	Total:	172

SOURCE: *Guía de Carreras Profesionales 1978-79 Instituto Politécnico Nacional.*

Only one IPN program has a *salida lateral* (lateral exit). Topographical and photogrammetrical engineering has a lateral exit after the fourth semester. At that point the intermediate degree of *técnico profesional en topografía* (professional technician in topography) is awarded. As yet, no students have chosen to take this lateral exit.

Interdisciplinary Center of Health Sciences. IPN's most nontraditional programs are offered in the Interdisciplinary Center of Health Sciences. *Licenciatura* programs in medicine, nursing, nutrition, odontology, optometry, and social work include fieldwork in the community as well as classroom activities and *paquetes de auto-enseñanza* (self-teaching packets). An interdisciplinary experience is emphasized, and students from all the programs work together in teams to solve community problems.

The Interdisciplinary Center curriculum is organized in terms of *módulos* (modules) and *fases* (phases). Each program consists of at least three phases of five modules each. A phase is approximately one year in length and usually includes 32 weeks of study with 30 hours in class each week. The three phases are as follows: Phase I—*El Hombre y la Comunidad Sanos* (Man and the Healthy Community); Phase II—*Mecanismos de Agresión y Defensa* (Mechanisms of Aggression and Defense); Phase III—*El Hombre y la Comunidad Enfermos* (Man and the Ill Community). The five modules developed in the course of each phase are behavior, bioenergetics, ecology, human phylogeny and ontology, and nutrition. Phase I is common to all the programs. In the other phases, the subject matter covered in the modules varies among the programs. When a program includes a fourth phase, it may include the same modules or it may be devoted to an internship.

The medical program which leads to the *licenciatura* degree of *médico cirujano y partero* (physician and obstetrician) is the longest program in the center. It consists of four phases, the third of which is three years in length rather than one. Phase IV is a rotating internship. The main difference between this and medical programs at other institutions is the emphasis on preventive medicine and health education.

IPN's health science programs in dentistry (which, like the medical program, emphasizes prevention of disease and maintenance of oral health) and optometry consist of four phases each. These programs lead to the *licenciatura* degree in *odontología* (dentistry) and in *optometría* (optometry). Each phase is only one year in length. Phase II consists of 96 days of theoretical study and 64 days of practical activities. Phases III and IV each include 32 days of theoretical study and 128 days of practical activities. Practical activities include work in the community and clinical and multidisciplinary laboratory work.

The programs in nursing and social work which lead to the *licenciatura* in *enfermería* and in *trabajo social*, respectively, include four one-year phases. Phase IV in each program, either Integral Nursing or Social Work, covers the same five modules. The program in social work differs from others in Mexico in that the social worker is also trained in the health sciences as well as in how to perceive and solve problems.

IPN's program in nutrition, which leads to the degree of *licenciatura en nutrición*, is the shortest of the center's programs, consisting only of the three basic phases. Equating the time spent in class to U.S. semester hours—in order to compare it with other programs—the program consists of approximately 180 semester hours.

Open Education. IPN's system of open education, referred to as *sistema abierto de enseñanza* (open system of education) or *no escolarizada* (not enrolled), is understood to be a system of education which permits students to begin or continue a program of study without having to attend class on a fixed schedule. Students learn at their own rate and assume responsibility for their own advancement. Currently, only one degree program is available completely in open form. This is the *licenciatura en comercio internacional* (international commerce) offered in the Higher School of Commerce and Administration. The program consists of 31 courses, grouped into five areas of knowledge, referred to as *reactores* (reactors).

Degree Requirements and Grading. All of IPN's *licenciatura* programs require a period of social service, a thesis, and a professional examination. In many programs, work on the thesis and/or the social service is incorporated into the curriculum. Since only 30-35% of the students who complete their coursework finish the other degree requirements, the following alternatives to the traditional thesis and professional examination have also been established:

1) Research and development project. This option, which does not require a professional examination, consists of individual or collective research under the supervision of a professor or researcher.

2) Thesis and oral examination. This is the traditional degree requirement with two variations: the collective thesis and the interdisciplinary or multidisciplinary thesis. The collective thesis is prepared by no more than five students in the same field of study. The interdisciplinary thesis is work, preferably on a subject of regional or local interest, carried out by students of several programs of study within the same school; the multidisciplinary thesis, by students in several different schools.

3) Summary thesis. This is a report on professional experience related to the degree program.

4) Professional examination by basic areas. This alternative, in which no thesis is required, consists of examinations in subjects considered basic or essential to the program of study.

5) Graduate courses. This alternative requires completion of at least 50% of an IPN graduate program.

Grading at IPN is based on a scale of 1 to 10 with 6 the lowest passing grade.

System of Federal Technical Institutes Specializing in Agriculture, Fishing, Forestry, Industry and Service, and Ocean Sciences

Instituto Tecnológico Regional/ITR (Regional Technological Institute)

The national system of 48 ITRs offers education in many industrial and service specializations at the upper secondary, undergraduate, and graduate levels. Its upper secondary programs are usually offered in separate institutions called Centros de Estudios Científicos y Tecnológicos/CECYT (Centers of Scientific and Technological Studies) and Centros de Estudios Tecnológicos/CET (Centers of Technological Studies). (See Chapter III for a description of CECYT and CET upper secondary programs.) Similarly, its graduate programs are offered in the Centro Interdisciplinario de Investigación y Docencia en la Educación Técnica/CIIDET (Interdisciplinary Center of Research and Teaching in Technical Education) or in the Centros Regionales de Estudios de Graduados e Investigación Tecnológica/CREGIT (Regional Centers of Graduate Study and Technological Research). (See Chapter V.) Today there is at least one ITR in every state, and the fields of study offered in each vary according to regional needs. In 1979-80, there were 34,294 students enrolled in 60 different *licenciatura* degree programs, most of them in engineering.

Table 20

Undergraduate Program in *Ingeniería Industrial en Producción* (Industrial Production Engineering), ITR

Economics (a/4/0/8)	Statics (a/4/0/8) →	Strength of Materials (a/4/2/10)	Drafting I (a/0/4/4) →	Drafting II (a/0/4/4)
Electives (42)	Dynamics (a/4/0/8)	Chemistry I (a/4/2/10)	Thermodynamics (a/4/0/8)	
Math I (a/4/0/8)	Math II (a/4/0/8) →	Math III (a/4/0/8) →	Math IV (a/4/0/8)	
Plant Engineering (b/4/0/8)	Electricity & Magnetism (a/4/2/10)	Planning Techniques (b/4/0/8) →	Production Control (b/4/0/8)	Operations Research III (c/4/0/8)
Programming (a/4/0/8)		Planning & Production Control (c/4/0/8)	Operations Research I (b/4/0/8) →	Operations Research II (c/4/0/8)
Numerical Analysis (a/4/0/8)	Methods Engineering II (c/4/2/10) ←	Methods Engineering I (b/4/2/10) ←	Industrial Statistics (b/4/0/8) →	Quality Control (b/4/0/8)
Intro. to Industrial Engineering (b/2/0/4)	Administration (b/4/0/8	Marketing (c/4/0/8)	Probability & Statistics (a/4/0/8)	Handling of Materials (c/4/0/8)
Accounting (b/4/0/8) →	Cost Control (b/4/0/8) ←	Economic Engineering (b/4/0/8) →	Industrial Diagnostics (c/4/0/8)	
Labor Laws (b/2/0/4) →	Industrial Relations (b/4/0/8)	Systems Engineering (c/4/0/8)	Industrial Psychology (c/4/0/8)	Design for Production (c/2/4/8)
Properties of Materials (c/4/2/10) →	Manufacturing Techniques I (c/4/2/10)	Seminar of Industrial Engineering (c/0/4/4)		

NOTE: Courses designated "a" belong to the common core; "b" to the intermediate module; "c" to the final module. The first number under each course represents the number of theory hours per week; the second number, the practical hours per week; the third number, the credit value of the course. Arrows indicate prerequisite courses; double headed arrows indicate courses which must be taken simultaneously. Courses without arrows preceding them may be taken as soon as the previous module has been completed or, for common core courses, during the initial semesters. Thus, Economics can be taken at any time during the student's completion of the common core module and has no prerequisites while Thermodynamics requires previous completion of Mathematics IV.

SOURCE: *Reticulas de Carreras de los Institutos Tecnológicos Regionales: Documento de Trabajo.*

Admission requirements to ITR *licenciatura* programs include completion of a general or technical upper secondary program considered preparatory for higher education, and an entrance examination. (See Chapter III.) Other upper secondary programs which include a minimum of five semesters of mathematics, three of physics, and three of chemistry may also be accepted for admission. Students entering an engineering program should have an upper secondary concentration in physics and mathematics or chemistry and biology. Those entering a program in the area of administration should have an upper secondary specialization in social and administrative sciences.

Each ITR offers some programs of study from the total of 60 available; none offers all 60 programs. Some programs are offered in only one ITR; others are offered in several. The *licenciatura* program in industrial production engineering (see Table 20) is a popular one, offered in almost every ITR, and its program of study is the same in every ITR in which it is offered.

Between 1970 and 1976, the ITR *licenciatura* programs were reorganized. The school year, which begins in September and ends in June, was divided into semesters, and a flexible curriculum and a credit system were added. Each course is assigned a credit value in accordance with the ANUIES guidelines on credit (discussed earlier in this chapter). Each ITR *licenciatura* program includes approximately 380 credits. Since the maximum course load each semester is 55 credits and the minimum is 32, students may complete *licenciatura* programs in no more than 12 and no fewer than 7 semesters, not counting summer semesters. Courses taken in the summer are designated *curso de verano*/CV (summer course) on the transcript.

The curriculum is composed of courses in one of three *módulos* (modules) or *troncos* (cores). The first is the *módulo básico* (basic module) or common core of courses which includes courses common to one of two broad areas of study offered in the ITR system, either administration or engineering. The second module or core is the *módulo intermedio* (intermediate module), which includes general courses in a particular field of study, such as administration of tourist businesses, civil engineering, or industrial engineering. The *módulo terminal* (final module) includes courses that correspond to a specialization within a program of study, such as administration of tourist businesses —hotels and restaurants; civil engineering in hydraulic works; and industrial engineering in production. The courses in the common core are introductory to the field of study and are prerequisites to the intermediate module. Courses in the intermediate module are also prerequisites for courses in the final module.

The order in which courses must be taken is specified in a diagram referred to as the *retícula* (network) of a program (see Table 20). This network system permits flexibility in the program of study, allowing students to select courses each semester within limits imposed by the network and within limits on the minimum and maximum number of credits that can be taken each semester.

Grading at the ITRs is based on a system of *calificación por objetivos* (grading by objectives). In this system, which is said to facilitate study, reinforce learning, and permit a more exact evaluation of knowledge, the subject content of each course is divided into *unidades* (units), with learning objectives specified in each one. Each course has at least four *exámenes ordinarios* (ordinary examinations). Each examination covers the objectives included in the corresponding units as well as any objectives not passed in the previous examination. The grade received in the course is based on the percentage of objectives passed. To pass a course, 70% of the objectives of the course must be passed. Simply NA/*no acreditada* ("not passed") is recorded on the transcript if less than 70% of the objectives are passed.

ITR students who pass 40% or more but less than 70% of the objectives of a course in ordinary examinations are eligible for the *examen de nivelación* ("fill-in" examina-

tion). Students who pass less than 40% of the course objectives as well as students who fail the "fill-in" exams may choose to take a *período de recuperación* (recuperation period), or repeat the course.

The "fill-in" examination is made up of all the objectives which were not passed in the ordinary examinations. In this exam, students must pass at least 80% of the objectives tested to pass the course. Sometimes, students who passed the course in the ordinary exams choose to take the fill-in exam to raise their grades. The course grade then is the percentage of objectives passed in ordinary exams plus those passed in the fill-in exam.

The recuperation period is only available the first time a course is failed, and students are allowed to keep those objectives passed during the ordinary exams or in the fill-in exam. The recuperation period can take one of two forms. The first is academic or technical tutoring with partial, periodic examinations. To pass, a student must pass all the objectives not passed during the ordinary and fill-in exams, obtaining a grade of 100%. The second type of recuperation period is self-teaching and the taking of a single *examen de recuperación* (recuperation examination). To pass the course, a student must pass enough of the objectives in the recuperation exam to pass a total of 80% of the objectives of the course. The recuperation period takes place in the semester immediately following the one in which the course was failed. Students who do not pass enough objectives during this period to pass the course lose all objectives passed previously. A course that has been failed may be repeated only once—if, indeed, it is offered again.

Special examinations may be authorized for students who are self-taught, or for students from institutions whose programs do not have official validity (discussed earlier in this chapter) who wish to earn transfer credit. Special examinations can only be offered in courses included in the program of study. To be eligible to take a special examination in a course, a student must already have passed any required prerequisite course.

The ITR system of open education, called *tecnológico abierto* (open technology), was first offered in the 1977-78 school year. It is currently available in 28 ITRs. Transcripts of courses taken in the open system are identical to transcripts of courses taken in the regular system, except for the designation, *materias cursadas en el sistema de tecnológico abierto* (courses taken in the open technical system).

In this system of grading by objectives, the percentage of students who finish their coursework is quite high. Although little information on grade distribution exists, that which is available indicates that high grades are more common in this system than in more traditional systems. The ITR de Ciudad Juárez estimates that 92% of its students complete their coursework and that 27% of these students do so with an average grade of 93, 41% with an 85, and 32% with a 76. The ITR del Istmo and the ITR de Piedras Negras report that no students finish with an average grade below 80. Prior to the 1970s, a more traditional evaluation system was used, and grades tended to be lower. The minimum passing grade in many institutions was 6 or 60.

Although alternatives to the thesis may be established by individual institutions, undergraduate degree requirements generally include a period of social service, a thesis, and a professional examination.

Instituto Tecnológico Agropecuario/ITA (Technological Agricultural Institute)

There are 17 ITAs with a total undergraduate enrollment of 4,111 in 1979-80. The ITAs do not offer upper secondary level studies; rather, SEP upper secondary programs in agriculture are offered in the Centros de Estudios Tecnológicos Agropecuarios/CETA (Centers of Technological Agricultural Studies). (See Chapter III.)

In addition to an entrance exam, admission to ITA *licenciatura* programs requires completion of a technical upper secondary program considered preparatory for higher education (see Chapter III). Admission to some programs requires completion of a specific technical specialization at the upper secondary level. Although the technical specializations required are offered in the CETAs, comparable programs from other institutions may also be accepted.

The ITA school year, which begins in September and ends in June, is divided into two semesters. ITA *licenciatura* programs are eight semesters in length and are comprised of 277 to 330 total semester hours. A few ITAs use a credit system based on the ANUIES guidelines (discussed earlier in this chapter).

Three of the programs, which lead to the degree of *ingeniero agrónomo* (agricultural engineer) with specializations in *administración agrícola* (agricultural administration), *agricultura de temporal* (seasonal agriculture), and *fitotecnia* (applied botany), share a 4-semester common core of courses. Upon completion of this common core, there is a *salida lateral* (lateral exit) and students who leave the program at this point are awarded the intermediate degree *agrónomo* ("agronomist" or agricultural specialist). (See Table 21.)

Three other programs, all of which relate to animal husbandry, *ingeniero agrónomo especialista en zootecnia* (agricultural engineer, specialist in animal husbandry), *ingeniero agrónomo especialista en administración agropecuaria* (agricultural engineer, specialist in animal husbandry and crops), and *ingeniero zootecnista especialista en ganadería extensiva* (animal husbandry engineer in livestock ranching), share another 4-semester common core of courses. Students who opt to take a lateral exit upon completion of these four semesters are awarded the intermediate degree *zootecnista* (animal husbandry specialist). (See Table 21.) Two ITA programs, *ingeniero agrónomo especialista en administración pecuaria* (agricultural engineer specialist in animal administration) and *ingeniero en desarrollo rural* (rural development engineer) have no common core courses and no lateral exits.

Grading at the ITAs is on a scale of 1 to 10 with 6 the lowest passing grade. Little information is available on grade distribution, but one ITA reports that 70% of the student body finishes its coursework, 10% with an average grade of 7, 20% with 8, and 70% with 9. *Licenciatura* degree requirements include a period of social service, a thesis, and a professional examination.

Table 21

Two Undergraduate Programs Offered in the Institutos Tecnológicos Agropecuarios/ITA

Ingeniero Agrónomo Especialista en Administración Agrícola (Agricultural Engineer, Specialist in Agricultural Administration)*			*Ingeniero Agrónomo Especialista en Zootecnia* (Agricultural Engineer, Specialist in Animal Husbandry)*		
T = Theory P = Practical					
Common Core Courses					
Agricultural Administration	hrs pr wk		Animal Husbandry	hrs pr wk	
First Semester	T	P	First Semester	T	P
Agricultural Economics	4	0	Animal Anatomy	4	2
Analytic Chemistry	3	2	Biostatistics	4	0

(continued)

Applied Mathematics	4	0
General Genetics	3	3
Plant Physiology	4	2
Seminar on Communication	2	0
Soil Science	3	3
Agricultural Production Techniques I	3	4

Second Semester	T	P
Agricultural Chemistry	3	2
Agricultural Ecology	2	2
Agrarian Legislation	4	0
Biometry	2	3
Insect Science	3	2
Plant Genetics	3	2
Seminar on Mexico's Agricultural Policy	2	0
Agricultural Production Techniques II	3	4

Third Semester	T	P
Fruit Cultivation	2	4
Hydraulics	3	2
Irrigation	2	4
Plant Pathology	3	3
Production & Handling of Seeds	2	4
Seminar: Agricultural Extension	1	3
Agricultural Production Techniques III	3	4

Fourth Semester	T	P
Agricultural Bldg. Construction	2	2
Agricultural Business Mgt.	4	4
Agricultural Industries	2	5
Pasture and Forage	2	3
Seminar on Cooperativism	2	0
Soil & Water Conservation	2	5
Agricultural Produc. Techniques IV	3	4

salida lateral: agrónomo ("agronomist" or agricultural specialist)

Cytology & Embryology	4	2
Physiological Chemistry	4	2
Seminar on Communication	2	0
Practice: Beef Cattle Production	0	20

Second Semester	T	P
Bromatology	4	0
Grassland Agriculture	4	4
General Principles of Economics	6	0
Genetics Applied to Animal Production I	6	0
Seminar on Spanish Composition	0	4
Practice: Dairy Cattle Production	0	12

Third Semester	T	P
Ecology & Animal Adaptation	6	0
Physiology of Reproduction & Artificial Insemination	4	4
Seminar on Ranching	0	4
Special Physiology	6	0
Practice: Pork Production	0	18

Fourth Semester	T	P
Admin. of Animal Businesses	4	2
Animal Hygiene	4	0
Industrialization & Commercialization of Animal Products	2	6
Seminar on Cooperativism	0	4
Practice: Animal Nutrition & Formulation of Feeds I	3	3
Practice: Rabbit & Poultry Production	0	16

salida lateral: zootecnista (animal husbandry specialist)

BEGINNING OF SPECIALIZATION

	hrs pr wk	
Fifth Semester	T	P
Accounting	6	0

	hrs pr wk	
Fifth Semester	T	P
Chemical Analysis	2	3

Administration I	5	0
Regional Ecosystems	2	4
Rural Anthropology	6	0
Statistics	3	4
Agricultural Production Techniques V	2	6

Sixth Semester	T	P
Administration II	5	0
Agricultural Credit	5	0
Marketing Techniques	6	0
Rural Sociology	6	0
Agricultural Production Techniques VI	2	6

Seventh Semester	T	P
Agricultural Markets	6	0
Analysis & Interpretation of Financial Statements	6	0
Design of Experiments	3	3
Insect Science Economics	3	3
Mercantile Law	3	0
Principles of Electronic Computation	2	2
Rural Development	2	4

Eighth Semester	T	P
Economic Analysis	6	0
Production Organization	2	3
Seminar on Institutions of Agricultural Sector	2	4
Elective I	4	0
Elective II	3	0
Elective III	2	3
Total Semester Hrs	291	

General Soil Science	2	3
Practice: Sheep Production	0	12
Workshop on Research Documentation	2	4

Sixth Semester	T	P
Animal Pathology I	2	3
Applied Topography	3	2
Hydrology	2	3
Plant Physiology	2	3
Rural Sociology	2	3
Practice: Goat Production	0	12

Seventh Semester	T	P
Animal Pathology II	2	3
Genetics Applied to Animal Production II	2	3
Organization of Production	2	4
Ranching, Building Construction & Engineering	6	6
Soil & Water Conservation	2	3
Elective I	2	4

Eighth Semester	T	P
Animal Experimentation	6	6
Practice: Animal Nutrition and Formulation of Feeds II	2	3
Seminar on Institutions of Agricultural Sector	2	4
Elective II	2	4
Elective III	2	4
Total Semester Hrs	309	

Source: Secretaría de Educación Pública, *Guía de Carreras de los Institutos Tecnológicos Agropecuarios*, Subsecretaría de Educación e Investigación Tecnológicas (1980).
*See text for other fields that share these common core courses.

Instituto Tecnológico Forestal/ITF (Technological Forestry Institute)

The ITF, located in El Salto, Durango, offers one *licenciatura* program which leads to the degree *ingeniero en desarrollo forestal* (forestry development engineer). In 1979-80, the school's enrollment was 232. No upper secondary programs are offered; instead, SEP upper secondary programs in forestry are offered in the Centros de Estudios Tecnológicos Forestales/CETF (Centers of Technological Forestry Studies). (See Chapter III.) Admission to the program requires an entrance examination and completion of the technical upper secondary program with the specialization in forestry offered in

the CETF. Comparable upper secondary programs considered preparatory for higher education offered by other institutions may also be accepted.

The ITF school year, which begins in September and ends in June, is divided into two semesters. A system of credits based on the ANUIES guidelines is used (discussed earlier in this chapter), and the 8-semester *licenciatura* program includes 492 credits. After the fourth semester there is a *salida lateral* (lateral exit) at which point the intermediate degree of *dasónomo* (forestry specialist) is awarded. *Licenciatura* degree requirements include a period of social service, a thesis, and a professional examination.

Instituto Superior de Educación Tecnológica Agropecuaria/ISETA (Higher Institute of Technological Agricultural Education)

Located in Roque, Guanajuato, the ISETA offers *licenciatura* programs which prepare students to teach in agricultural schools at the lower secondary, upper secondary, and higher education levels. In 1979-80 there were 140 students enrolled. Admission to one of the programs requires completion of an upper secondary program considered preparatory for higher education with a particular agricultural specialization, in addition to an upper secondary grade average of 8/10 and an entrance examination.

The basic degree awarded by the ISETA is the *licenciatura en pedagogía con especialidad en* — (licentiate in pedagogy with specialization in —). The specializations available are *agricultura* (agriculture), *fruticultura* (fruit cultivation), *ganadería* (livestock raising), *industrias agropecuarias* (agricultural industries), and *maquinaria agrícola* (agricultural machinery). The school year, which begins in September and ends in June, is divided into two semesters. A system of credits based on the ANUIES guidelines is used (discussed earlier in this chapter).

The programs of study are all eight semesters in length and are comprised of 527 to 575 credits. The programs in agriculture, livestock raising and agricultural machinery are also offered in summer courses over a six-year period for students who are already agricultural education teachers. In addition to a period of social service, a thesis, and a professional examination, degree requirements also include the ability to translate a foreign language.

Instituto de Estudios Superiores en Ciencias y Tecnología del Mar/IESCITEM (Institute of Higher Studies in Ocean Sciences and Technology)

Located in the port of Veracruz, the IESCITEM offers four *licenciatura* programs, three of which are related to marine engineering and one to the administration of fishing businesses. No upper secondary programs are offered; instead, the SEP upper secondary programs in fishing are offered in the Centros de Educación en Ciencia y Tecnología del Mar/CECITEM (Centers of Education in Ocean Science and Technology). In 1979-80, the enrollment of the IESCITEM was 447.[31] In addition to an entrance examination, admission to *licenciatura* programs requires the completion of an upper secondary program considered preparatory for higher education in a specific academic concentration. (See Chapter III.) For example, a concentration in social sciences and humanities is required to enter the program in administration.

The school year, which begins in September and ends in June, is organized into two semesters. A credit system is employed and, in accordance with the ANUIES guidelines, every semester hour of academic or theoretical coursework is worth 2

31. *Ibid.*, p. 9.

credits, and every semester hour of practical or laboratory coursework is worth 1 credit. In addition to the regular curriculum, each student is expected to make three visits each semester to various businesses, fishing installations, commercial centers, cooperatives, processing plants, and research units.

The four *licenciatura* programs at IESCITEM are all eight semesters in length and include from 366 to 403 credits. The three engineering programs lead to the degree of *ingeniero pesquero* (fishing engineer) with specialization in *acuicultura* (hydroponics), *métodos y artes de pesca* (fishing methods), and *procesos alimentarios* (food processing). The administration program leads to the degree of *licenciatura en administración de empresas pesqueras* (administration of fishing businesses).

Other Federal Technical Institutions Dependent on the SEP

Centro Nacional de Enseñanza Técnica Industrial/CeNETI (National Center of Technical Industrial Education)

The CeNETI, located in the Federal District, was founded in 1964 to train teachers of technical subjects for upper secondary schools and institutions of higher education. As an institution "decentralized" from the SEP, it designs its own study plans and programs and awards its own *certificados de estudios* (transcripts). It now specializes in engineering, with *licenciatura* programs leading to the degrees of *ingeniero civil* (civil engineer), *ingeniero industrial* (industrial engineer), and *ingeniero mecánico electricista* (mechanical electrical engineer). The industrial engineering program is the most diversified, with specializations in *electricidad* (electricity), *electrónica* (electronics), *química* (chemistry), *metalmecánica* (metal mechanics), *fundición* (smelting), *plásticos* (plastics), and *artes gráficas* (graphic arts). The 1979-80 undergraduate enrollment was 1,269.[32]

The *licenciatura* programs at the CeNETI are all eight semesters in duration. The teaching degree has become an infrequently used *salida lateral* (lateral exit) from the industrial engineering program after the sixth semester. The intermediate degree awarded at this point is the *profesor de enseñanza técnica industrial* (teacher of technical industrial education).

CeNETI grading is on a scale of 1 to 10 with 6 the minimum passing grade. (See Grading earlier in this Chapter.)

Centro Regional de Enseñanza Técnica Industrial/CeRETI (Regional Center of Technical Industrial Education)

There are two CeRETIs: the one in Tapachula, Chiapas, is called the CeRETI del Soconusco; the other is the CeRETI de Guadalajara. These are institutions dependent on the SEP but administered by the CeNETI. Established to offer technical upper secondary programs, they now offer programs at both the upper secondary and undergraduate levels. As in the CeNETI, *licenciatura* programs in civil and industrial engineering are offered. In 1979-80, however, only 298 of 1,601 students at the two CeRETIs were enrolled in undergraduate programs; the rest were enrolled in technical upper secondary programs (see Chapter III). There is a lateral exit at the end of six semesters from the *licenciatura* programs at which point the degree of *profesor de enseñanza técnica industrial* (teacher of technical industrial education) is awarded.

32. *Ibid.*, p. 9.

Instituto Tecnológico Superior de Gerencia Ejidal
(Higher Technological Institute of Common Land Management)

Located in Ciudad Obregón, Sonora, the Higher Technological Institute of Common Land Management offers a single *licenciatura* program which leads to the degree of *ingeniero en administración ejidal* (common land management engineering). Although 81 students were enrolled in 1977-78, according to one SEP official, this institution has since ceased to operate.[33]

Federal Tertiary Teacher Training Institutions Dependent on the SEP

Article 3 of the 1917 Constitution and the 1973 Federal Education Law grant the federal government extensive power over teacher training. Therefore, SEP's role in teacher training is different than in any other type of undergraduate education. Not only does the SEP administer its own tertiary-level teacher training institutions, but it also establishes programs of study and other policies for all types of teacher training institutions, private or state.

Due to the standardizing effect of the SEP, teacher training at the tertiary level was once quite uniform. Tertiary-level teacher training was dominated by the *escuelas normales superiores* (higher normal schools) which exist primarily to educate teachers for *escuelas secundarias* (lower secondary schools) (see Chapter II) and *escuelas normales* (upper secondary level teacher training institutions). (See Chapter III.) Today, teacher training is in a state of transition. Not only are teachers for lower secondary schools and upper secondary level teacher training schools educated at the tertiary level, so are special education teachers, physical education teachers and even preschool and primary school teachers.

In spite of the changes, programs of study tend to be quite similar among the different institutions within each type of tertiary level teacher training. For this reason, the federal teacher training institutions will be discussed within each of the four categories of tertiary teacher education: the *escuelas normales de especialización* (normal schools for special education), which educate special education teachers; the *escuelas normales superiores* (higher normal schools); the *escuela normal superior de educación física* (higher normal school of physical education), which educates physical education teachers; and the two institutions of higher education for preschool and primary school teachers, the Universidad Pedagógica Nacional/UPN (National Pedagogical University) and the Centro de Estudios de Licenciatura de Educación Normal (Center of Licentiate Studies in Normal Education).

Escuela Normal de Especialización
(Normal—Teacher Training—School for Special Education)

There are three normal schools for special education, the Escuela Normal de Especialización in Mexico City, the Escuela Normal de Especialización de Monterrey in Monterrey, Nuevo León, and the Escuela Normal Regional de Especialización in Saltillo, Coahuila. These institutions train special education teachers for children, adoles-

33. Asociación Nacional de Universidades e Institutos de Enseñanza Superior, *Anuario Estadístico, 1978* (México, D.F.: Imprenta Ajusco, 1979), p. 143.

cents, and adults. They are all federal institutions dependent on the SEP. (Until 1978 the Escuela Normal de Especialización de Monterrey was dependent on a state government.)

The basic degree awarded is the *licenciatura de educación especial* (licentiate in special education) with various specializations, including *audición y lenguaje* (speech and hearing), *ciegos y débiles visuales* (visual handicaps), *deficientes mentales* (mental retardation), *inadaptados e infractores* (antisocial behavior), *lisiados del aparato locomotor* (physical handicaps), and *problemas de aprendizaje* (learning problems). Since the programs of study are developed by the SEP, they are basically the same at all three institutions; however, some differences do exist. The schools in Monterrey and Mexico City have only recently begun to offer the *licenciatura* degree rather than the degree of *profesor de educación especial* (special education teacher). The school in Saltillo reportedly still offers the latter degree. (See Chapter VI for information on the effects of the 1973 Federal Education Law on undergraduate teaching degrees.)

In all three schools, the program of study is eight semesters in length and includes approximately 175 semester hours. Admission to the school in Monterrey requires the upper secondary teaching qualification, *profesor* or *maestro* (teacher), in addition to two years of teaching experience and an entrance exam.

In addition to the regular 8-semester program, there is also an intensive *licenciatura* program for teachers working in geographic areas where there is no special education school. Five years in length, the program consists of five intensive summer courses during the months of July and August and five periods, from October to May, of correspondence courses. During the intensive summer program, students meet 10 hours a day, six days a week, for six weeks. Each subject requires a total of 48, 72, or 96 hours, depending on its importance to the program. (See Table 22.) During the period from October to May, students study individually or meet in small groups to discuss the materials sent by the school. Grading in the intensive class is based on homework, class participation, oral reports and a final exam. Grading in the correspondence period is based on responses to correspondence questionnaires and reports of periodic visits by an authorized representative of the school. The results of the two periods are averaged to determine the yearly grade.

The SEP grading scale, established in 1978 by agreement Number 17, is on a scale of 5 to 10 with 6 the lowest passing grade. The school in Monterrey, however, uses 7 as the minimum passing grade, as do many institutions in Northern Mexico.

Table 22

***Licenciatura en Deficientes Mentales* (Mental Retardation), Escuela Normal de Especialización (Normal School of Special Education)**

Regular Program		Intensive Program (Summer Only)	
First Semester	hrs pr wk	First Year	total hrs
Advanced Psychology	4	Genetic Psychology I	96
Biological Basis for Study of Mental Retardation	5	Intro. to Linguistics	48
Contemporary Pedagogical Themes	4	Neurophysiological Basis of Learning	96
Intro. to Special Ed.	3	Pedagogy	48
Sociology & Anthropology	4	Special Education in Mexico	48

(continued)

Second Semester	
Genetic Psychology	5
Neurology of Mental Retardation	5
Perceptual Stimulation	3
Tests and Measurements	3
Techniques of Special Ed. for Mentally Retarded I	4

Third Semester	
Child Psychology	4
Introduction to General Psychopathology	4
Multiprofessional Equipment	3
Techniques of Manual Dexterity	3
Techniques of Special Ed. for Mentally Retarded II	6

Fourth Semester	
Mental Hygiene	3
Occupational Therapy	3
Psychopathology of Mental Retardation	5
Social Adaptation Pedagogy	3
Techniques of Special Ed. for Mentally Retarded III	6

Fifth Semester	
Intro. to Psychotherapy	3
Social Orientation to Problems of Mentally Retarded	5
Speech Therapy	6
Techniques of Special Ed. for Mentally Retarded IV	6

Sixth Semester	
Contemporary Pedagogical Themes	3
Parent Orientation	3
Public Health Seminar	3
Seminar on Special Ed. Planning	3
Techniques of Special Ed. for Mentally Retarded V	6
Thesis Seminar	3

Seventh Semester	
Communication Techniques	4

Second Year	
Genetic Psychology II	48
Neurophysiopathology of Learning	48
Spanish Phonetics	48
Teaching of Arithmetic	96
Teaching of Reading & Writing	96

Third Year	
Applied Morphosyntax	48
Etiology of Mental Retardation	48
Genetic Psychology III	48
Pedagogical Research Techniques	96
Teaching Workshop on Art & Manual Activities	96

Fourth Year	
Psychopathology	48

Directed Practice Teaching	20	Seminar on Special Ed. Planning I	96
Group Dynamics	4	Techniques of Group Integration	48
		Techniques of Pedagogical Eval.	48
		Theoretical Basis of Psychological Evaluation	48
Eighth Semester		Fifth Year	
Directed Practice Teaching	20	Case Study Workshop & Applied Planning	96
Thesis Development	6	Seminar on Special Ed. Planning II	96
		Thesis Seminar	96
Total Semester Hours	175	Total Hours	1,584

Source: Study plans of the Escuela Normal de Especialización, Monterrey, N.L. (typed)

Escuela Normal Superior/ENS (Higher Normal—Teacher Training—School)

There are two federal higher normal schools, the Escuela Normal Superior de México and the Escuela Normal Superior Federal de Aguascalientes. Mexico's higher normal schools offer undergraduate programs to prepare teachers for the nation's *escuelas secundarias* (lower secondary schools) and *escuelas normales* (teacher training schools at the upper secondary level).

Until 1976, the undergraduate degree awarded by the higher normal schools was the *maestro* or *profesor* (teacher). When the 1973 Federal Education Law established that the undergraduate degree awarded by the higher normal schools was indeed a *licenciatura*, most institutions replaced the *maestro* or *profesor* degree with the *licenciatura* (see Chapter VI).

Both the pre-1976 *maestro* and the current *licenciatura* programs are four years in length. The *maestro* program included 25 year-long courses, while the *licenciatura* program includes 48 semester-long courses. Whereas the *maestro* degree was awarded in individual subjects, the *licenciatura* curriculum is organized by areas, including educational psychology, English, mathematics, the natural sciences, the social sciences, Spanish, and psychology, to better correspond to the lower secondary curriculum. (See Chapter III.)

Admission to the undergraduate programs of the higher normal schools requires completion of one of the upper secondary teacher training programs or an upper secondary program considered preparatory for higher education. (See Chapter III.)

The school year begins in September and ends in June, in accordance with SEP's official calendar. Grading is based on a scale of 10 with 6 as the lowest passing grade.

Escuela Superior de Educación Física (Higher School of Physical Education)

Prior to 1976, the Higher School of Physical Education was the Escuela Nacional de Educación Física (National School of Physical Education) which offered only upper secondary level programs (see Chapter III). In 1976, when its name was changed, it began to offer an undergraduate program leading to the degree of *licenciatura en educación física* (licentiate in physical education).

Table 23

***Licenciatura en Educación Física* (Physical Education), Escuela Superior de Educación Física (Higher School of Physical Education)**

First Year			
First Semester	Hrs pr Wk	Second Semester	Hrs pr Wk
Morphology I	6	Biochemistry	6
Musical Rhythm	6	Gymnastics I	6
Psychology I	6	Morphology II	6
Recreational Activities	6	Swimming I	6
Volleyball	6	Written & Oral Expression Workshop	6
Second Year			
Third Semester		Fourth Semester	
Gymnastics II	6	Athletics I	6
Physical Expression	6	History of Physical Ed.	6
Physiology I	6	Physical Ed. & Its Teaching I	6
Psychology II	6	Physiology II	6
Swimming II	6	Techniques of Recreation	6
Third Year			
Fifth Semester		Sixth Semester	
Educational Technology	6	Athletics II	6
Philosophy of Physical Ed.	3	Biomechanics	6
Physical Ed. & Its Teaching II	6	Dance	6
Basketball I	6	Physical Ed. & Its Teaching III	6
Camping	6	Sociology of Sports	3
Gymnastics III	6		
Fourth Year			
Seventh Semester		Eighth Semester	
Basketball II	6	Anthropology	6
Educational Legislation & Administration	6	Health	6
Workshop of Choreography & Movement	6	Statistical Methods & Research Techniques	6
Degree Requirement Activities	12	Degree Requirement Activities	12
		Total: 240	

SOURCE: Secretaría de Educación Pública, *Escuela Superior de Educación Física, Instructivo de Admisión 1980.*

Admission to the undergraduate program requires completion of an upper secondary teacher training program or an upper secondary program considered preparatory for higher education (see Chapter III) with a minimum overall grade average of 7.5. The student must also pass three entrance examinations, which test general knowledge, physical aptitude, and psychological condition.

The 8-semester program of the Higher School of Physical Education is comprised of 38 courses grouped into five training areas: artistic, biological, cultural, psychopedagogical, and technical. A total of 240 semester hours are spent in class. (See Table 23 for the complete program of study.) Degree requirements include a 9-month period of social service; a report-thesis which involves a report on experiences during the period of social service and scientific research on an educational problem; a professional examination; and the ability to translate a foreign language. Grading is on a scale of 10 with 6 the lowest passing grade. (See Grading, this chapter.)

Universidad Pedagógica Nacional/UPN (National Pedagogical University)

UPN was founded in 1978 by presidential decree to offer preschool and primary teachers who had not been trained at the undergraduate level the opportunity to earn *licenciatura* degrees in fields of study related to preschool and primary education. At the present time, salary increases are being offered as financial incentives to preschool and primary teachers who go on to earn a *licenciatura* degree. It is felt that someday perhaps all preschool and primary teachers will be educated at the undergraduate level.

There are two types of UPN programs: the traditional programs at the Mexico City campus where the students attend classes; and a type of open education called *sistema de educación a distancia*/SEAD (system of "education by long distance"), for students outside Mexico City. There are 64 *unidades* (units) of UPN in areas outside Mexico City that serve as headquarters for SEAD.

In addition to an entrance examination, admission to one of the traditional *licenciatura* programs requires completion of an upper secondary teacher training program or of an upper secondary program considered preparatory for higher education (see Chapter III). Of the 4,000 students enrolled in the traditional program in Mexico City in 1980-81, 3 000 were already teachers and 1,000 had completed upper secondary programs considered preparatory for higher education. Only working teachers are admitted to SEAD; in 1980-81, the enrollment was approximately 51,000.

In Mexico City, five *licenciatura* programs are offered by UPN: *administración educativa* (educational administration), *educación básica* (basic education), *pedagogía* (pedagogy), *psicología educativa* (educational psychology), and *sociología de la educación* (sociology of education). The programs are all eight semesters in duration and include 32 courses. Preschool and primary school teachers are exempted from some courses in the basic education program and can finish that program in six semesters. (See Table 24.)

The UPN curriculum is organized into three phases or areas. The first, the *área de formación básica* (area of basic training), common to all programs of study, lasts for two semesters and includes the following courses: the history of ideas I and II, mathematics I and II, composition and research documentation I and II, and Mexican society I and II. The second phase, the *área de integración vertical* (area of vertical integration), is also common to all programs, and includes the following courses: the basis of the process of teaching-learning, constitutional law and the educational system, philosophy and practice of education in Mexico, principles of statistics, problems of education and society in Mexico, research methodology I and II, social functions of education, statistics applied to the social sciences, and the teaching-learning process. The third phase is the *área de concentración profesional* (area of professional concentration) (see Table 24 for courses included in this area of each program).

SEAD offers *licenciatura* programs in *educación pre-escolar* (preschool education), *educación primaria* (primary education), and *educación básica* (basic education).

Grading is on a scale of 10 with 6 the lowest passing grade. (See Grading, this chapter.)

Table 24

Courses Included in Area of Professional Concentration of Each *Licenciatura* Program of UPN

Administración Educativa (Educational Administration)

- Administration of Financial Resources
- Computer Science
- Decisions Theory
- Economic Theory
- Educational Administration
- Educational Planning & Evaluation
- Human Resources Administration
- Means of Social Communication
- Mexican Public Administration
- Operations Research
- Organization & Administration of Academic Projects
- System of Logistic Support
- Systems Theory
- Theory of Administration

Educación Básica (Basic Education)

- Alternatives for Educational Evaluation
- Alternatives of Curricular Design
- Alternatives of Educational Practice
- Analysis of Educational Practice
- Definition of Educational Practice
- Principles of Curriculum Development
- Process of Educational Evaluation
- Psychological Foundations of Educational Practice*
- Psychological Theory of Development*
- School Administration
- Teaching of Mathematics*
- Teaching of the Natural Sciences*
- Teaching of Spanish*

Pedagogía (Pedagogy)

- Analysis of Educational Evaluation
- Analysis of Pedagogical Methods
- Evaluation of Educational Practice
- Group Learning & Communication
- Open Systems of Teaching/Learning
- Pedagogical Research, I, II, III
- Planning & Curricular Design
- Principles of Educational Planning
- Psychological Foundations of Educational Practice
- Psychological Theory of Development
- School Administration & Organization
- Elective Seminar

Psicología Educativa (Educational Psychology)

- Adolescent & Adult Education
- Contemporary Currents of Psychology
- Theory of Development
- General Psychology
- Group Theory
- Learning Disabilities
- Learning Theory
- Motivation Theory
- Preschool & Primary Education
- Psychological Research I, II, III
- Psychology of Intelligence
- Social Psychology

Sociología de la Educación (Sociology of Education)

- Cultural Sociology & Cultural Anthropology
- Economic Theory I, II
- Foundations of Sociology
- Research I, II, III
- Social Class Stratification
- Social Psychology Applied to Education
- Sociological Analysis of Educational Systems
- Sociological Theory
- Sociology of Educational Administration & Organization
- Sociology of Knowledge
- Theory of Social Change & Models of Development

*Courses for students without teaching certificates.

Source: *Universidad Pedagógica Nacional Proyecto Académico 1979.*

Centro de Estudios de Licenciatura de Educacion Normal (Center of Licentiate Studies in Normal Education)

The Center of Licentiate Studies in Normal Education, like the UPN, offers undergraduate programs of study for preschool and primary school teachers. Two *licenciatura* programs are offered, one in *enseñanza pre-escolar* (preschool education) and the other in *enseñanza primaria* (primary education). (No other information on this institution is available.)

Federal Fine Arts Institutions Dependent on the SEP

The federal institutions which offer education in the fine arts are administered by the Instituto Nacional de Bellas Artes/INBA (National Institute of Fine Arts), which is itself dependent on the SEP. The INBA is a cultural institute, not an educational institution, and its educational programs are offered in separate institutions.

The following institutions are included in this chapter because the duration of their programs of study, with the stated admission requirements, is long enough to place them at the tertiary level. However, since artistic achievement is more important to these institutions than level of education, admission requirements can sometimes be flexible. (See Chapter VI.)

Conservatorio Nacional de Música (National Conservatory of Music)

The National Conservatory of Music has two basic objectives: to educate all kinds of professional musicians, including composers, directors, musicologists and vocalists, and to train music teachers. The conservatory offers programs of study in the following four areas:

- Musical Interpretation: *ejecutante* (performer) or *concertista* (concert musician) in bassoon, bass violin, cello, clarinet, English horn, flute, French horn, guitar, harp, oboe, organ, piano, percussion instruments, saxophone, trombone, trumpet, tuba, viola, and violin; *director de coro* (choral director); and *director de orquesta* (orchestra director).
- Teaching: *maestro de canto* (voice teacher), *maestro de enseñanza musicol escolar* (teacher of music in school), *maestro de enseñanzas musicales específicas* (teacher of specific musical skills), *maestro de instrumento* (teacher of a musical instrument), and *maestro de solfeo* (sightsinging teacher).
- Research: *musicólogo* (musicologist) and *etnomusicólogo* (ethnomusicologist).
- Creation: *compositor* (composer)

All the programs consist of three cycles: *inicial* (beginning), *medio* (middle), and *superior* (higher). The completion of primary school and an entrance exam are usually required for admission. However, there is also a *curso infantil* (course for children), a 4-year course for students 7 or 8 years of age, and a 3-year course for those 9 to 11. Depending on their ability, students who complete one of the courses for children are usually promoted directly to the middle cycle, which shortens the overall length of the program.

In most cases, the beginning cycle is three years in duration, the middle cycle, four, and the higher, three. This varies with some specializations as follows:

—Musician (all instruments): 7 years.

—Choral or orchestra director, concert musician (percussion instruments): beginning cycle, 3 years; middle, 3 years; higher, 4 years; total: 10 years.

—Concert musician (organ, string instruments, woodwind instruments): beginning cycle, 4 years; middle, 3 years; higher, 3 years; total: 10 years.

—Concert musician (metal wind instruments): beginning cycle, 3 years; middle, 4 years; higher, 2 years; total: 9 years.

—Voice teacher, concert musician (oboe), teacher of music in school: beginning cycle, 3 years; middle, 3 years; higher, 2 years; total: 8 years.

Students who have also completed the equivalent of upper secondary education are awarded the *licenciatura en música* (licentiate in music) in the appropriate specialty upon completion of the higher cycle. Grading is on a scale of 1 to 10 with 6 the lowest passing grade.

Escuela de Arte Teatral (School of Theater Arts)

The School of Theater Arts offers three 4-year *licenciatura* programs leading to the degree of *actor* (actor), *escenógrafo* (scenery designer) and *director* (director). Admission requirements include the completion of an upper secondary program considered preparatory for higher education (see Chapter III) and an entrance exam.

Escuela de Diseño y Artesanía (School of Design and Artisanry)

Sometimes referred to as two separate institutions—the Escuela de Diseño and the Escuela de Artesanía—the School of Design and Artisanry seeks to train professionals to solve design problems in art and artifact production, industrial production, and manufacturing. Four *licenciatura* programs are offered leading to the degrees of *diseñador gráfico* (graphics designer), *diseñador de muebles* (furniture designer), *diseñador de objetos* (object designer), and *diseñador textil* (textile designer). Admission to one of these programs requires completion of an upper secondary program considered preparatory for higher education and an entrance exam.

The programs are all eight semesters in length and include from 153 to 159 total semester hours. Each program is comprised of three *niveles* (levels). The first is the *nivel introductorio* (introductory level), which includes the first two semesters and is common to all the programs. The second level, the *nivel de profundización y especialización* (level of specialization), includes the next four semesters. The final level, which includes the last two semesters of the program, is the *nivel de producción y de servicio social* (level of production and social service). During the final level, students begin practicing their skills while they prepare a thesis and perform the social service, both of which are required for graduation.

Grading is on a scale of 10 with 6 as a minimum passing grade. The school reports that only 12% of their students finish their coursework: 33.3% of them with an average of 8, 50% with an average of 9, and 16.6% with an average of 10.

Escuela Nacional de Pintura y Escultura "La Esmeralda" (National School of Painting and Sculpture "The Emerald")

The National School of Painting and Sculpture offers three *licenciatura* programs leading to the degrees of *pintor* (artist), *escultor* (sculptor), and *grabador* (engraver). All three include ten semesters of study. Admission normally requires completion of an upper secondary program considered preparatory for higher education, in addition to an entrance exam. In some cases, however, a student with artistic talent may

be accepted after lower secondary school. If so, the student must first complete the upper secondary program normally required for admission, in addition to the undergraduate program, in order to be awarded one of the three *licenciatura* degrees.

ESCUELA SUPERIOR DE MÚSICA (Higher School of Music)

The Higher School of Music is reported to offer *licenciatura* degree programs; however, students at any educational level may be admitted as long as they demonstrate through an entrance exam that they have sufficient musical knowledge to begin the desired program. Only the completion of the appropriate educational level for the age of the student is required. Some programs specify the minimum age required in order for students to enter the program.

The programs offered are all eight years in duration. The following is a list of programs offered, with the minimum age requirement for admission specified where known: *arpa* (harp)—10 years; *canto* (voice)—18 years; *clarinete* (clarinet)—12 years; *composición* (composition); *contrabajo* (bass violin)—10 years; *corno* (English horn)—12 years; *dirección de coro* (choral direction); *dirección de orquesta* (orchestra direction); *enseñanza musical escolar* (school music education)—12 years; *fagot* (bassoon)—12 years; *flauta* (flute)—12 years; *guitarra* (guitar)—12 years; *oboe* (oboe)—12 years; *piano* (piano)—8 years; *saxofón* (saxophone)—12 years; *trombón* (trombone)—12 years; *trompeta* (trumpet)—12 years; *tuba* (tuba)—12 years; *viola* (viola)—6 years; *violín* (violin)—6 years; *violóncelo* (violoncello)—6 years.

TALLER NACIONAL DE TAPIZ (National Workshop of Tapestry)

The National Workshop of Tapestry offers one *licenciatura* program leading to the degree of *diseñador textil* (textile designer). It is an 8-semester program which requires the completion of an upper secondary program considered preparatory for higher education, and an entrance exam for admission.

Other Tertiary-Level Federal Institutions Dependent on the SEP

ESCUELA NACIONAL DE ANTROPOLOGÍA E HISTORIA/ENAH
(National School of Anthropology and History)

The ENAH was founded in 1938 as the anthropology department in IPN's National School of Biological Sciences. In 1942, it acquired its present status as a separate institution dependent on the Instituto Nacional de Antropología e Historia/INAH (National Institute of Anthropology and History). The INAH is a cultural and research institute dependent on the SEP.

The ENAH offers programs at both the undergraduate and graduate levels. Admission to one of the undergraduate programs requires completion of one of the general or vocational upper secondary programs considered preparatory for higher education or completion of one of the upper secondary teacher training programs. The school year, which begins in October and ends in August, is divided into two semesters.

Licenciatura programs at ENAH are offered in seven fields of study: *antropología física* (physical anthropology), *antropología social* (social anthropology), *arqueología* (archeology), *etnohistoria* (ethnohistory), *etnología* (ethnology), *historia* (history) and *lingüística* (linguistics). A system of credits is used in which every semester hour of class is worth 2 credits. The programs of study, all eight semesters in length, range in number of credits from 280 to 356. Most of the programs include several elective courses as well as a thesis seminar during the last semester.

Escuela Nacional de Biblioteconomía y Archivonomía/ENBA (National School of Library and Archive Science)

The ENBA now offers programs of study in library science and archive science at the upper secondary and undergraduate levels. Originally, the ENBA was founded to offer training programs for the personnel of the SEP libraries. In 1948, it began to offer academic programs. At that time, a 3-year undergraduate program leading to the *maestría en biblioteconomía* ("master's" in library science) was also established. This program was designed especially for graduates of teacher training programs at the upper secondary level; however, the completion of other upper secondary programs considered preparatory for higher education was also accepted for admission. In accordance with the 1973 Federal Education Law, the *maestría* program (like the *maestro* program in higher normal schools) was changed to a *licenciatura* program in 1975.

The first students graduated from the *licenciatura* program in 1979. Today there are approximately 450 students enrolled in the ENBA, 150 of them at the undergraduate level. Eighty percent of the undergraduates are specializing in library science.

ENBA now uses a semester and credit system and, in accordance with the ANUIES guidelines for the use of the credit system, every semester hour of academic or theoretical coursework is worth 2 credits, and every semester hour of practical or laboratory coursework is worth 1 credit. The *licenciatura* program in *biblioteconomía* (library science) is comprised of 368 credits, the *licenciatura* program in *archivonomía* (archive science), 360. There is a core of courses common to both programs which includes 154 credits. Each program includes 43 semester-long courses. The former *maestría* program included 23 year-long courses.

Completion of an upper secondary program considered preparatory for higher education or of an upper secondary teacher training program is required for admission to the ENBA. Students with a *bachillerato técnico* from the ENBA who have an overall average of 8 out of 10 and who have never failed a course are afforded automatic access to the undergraduate programs. Students coming from programs outside the ENBA are required to take an entrance exam. No particular upper secondary concentration is required. However, if the upper secondary concentration is in a very different area, such as physical sciences and mathematics, a one-semester *curso de nivelación* (fill-in course) in technical subjects relevant to library science may be required.

Grading is on a scale of 1 to 10 with 6 the lowest passing grade. (See Grading, this chapter.) There are three types of final examinations of varying difficulty: the regular final exam is the *examen ordinario* (ordinary examination) for students who have attended 80% of their classes and have an average of 6 or above in the class; the more difficult *examen extraordinario* (extraordinary examination) is for students with an attendance record of between 50% and 79% and a grade average below 6; the *examen a título de suficiencia*, the most difficult, is for students with an attendance record of less than 50% and a grade average below 5.

Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete"/ENCRM (National School of Preservation, Restoration and Museum Science "Manuel del Castillo Negrete")

The ENCRM, like the National School of Anthropology and History, is dependent on the Instituto Nacional de Antropología e Historia/INAH (National Institute of Anthropology and History), which, in turn, is dependent on the SEP. Located in a colonial convent, the ENCRM is part of the Centro Churubusco (Churubusco Center), a cultural center which has diverse educational entities related to the fields of restora-

tion and museum science. Two of them, other than the ENCRM, offer programs of study (see below).

The ENCRM offers one undergraduate program and two graduate programs. Admission to the undergraduate program requires the completion of an upper secondary program considered preparatory for higher education and an entrance exam. The undergraduate program leads to the degree of *licenciatura en restauración de bienes*

Table 25

Licenciatura en Restauración de Bienes Muebles* (Restoration of Historical Furnishings), ENCRM

First Semester	Second Semester	Third Semester
Applied Chemistry I	Applied Chemistry II	Applied Biology I
Intro. to History I	Applied Chemistry III	Applied Chemistry IV
Intro. to Program I	History of Art I	History of Art II
Languages I	Intro. to History II	History of Pre-Hispanic Art I
Photography Wkshp. I	Intro. to Program II	Preservation Wkshop. I
Pictorial Techniques	Languages II	
Research Methodology & Techniques I	Photography Wkshp. II	
	Research Methodology & Techniques II	
Fourth Semester	**Fifth Semester**	**Sixth Semester†**
Applied Biology II	Applied Chemistry V	Applied Chemistry VI
Climatology & Illumination	Christian Iconography	History of Art V
History of Art III	History of Art IV	History of Modern Art in Mexico
History of Colonial Art I	History of Colonial Art II	Organization of Works of Restoration
History of Pre-Hispanic Art II	History of Pre-Hispanic Art III	Preservation Wkshp. IV
Preservation Wkshp. II	Preservation Wkshp. III	
Seventh Semester	**Eighth Semester**	**Ninth Semester**
Applied Chemistry VII	Applied Chemistry VIII	Applied Chemistry IX
History of Minor Arts I	General Archeology	Preservation Wkshp. VII
Legal Defense of Culture	Hist. of Minor Arts II	Research Seminar I
Preservation Wkshp. V	Preservation Wkshp. VI	
Socioeconomic History of New Spain I	Socioeconomic History of New Spain II	
		Tenth Semester
		Preservation Wkshp. VIII
		Psychology of the Profession
		Research Seminar II

*Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete" (National School of Preservation, Restoration and Museum Science "Manuel del Castillo Negrete").

†After the sixth semester, students may opt for the intermediate degree, technician in restoration of historical furnishings.

SOURCE: *Carrera Profesional en Restauración de Bienes Muebles*, Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete," INAH-SEP.

muebles (restoration of historical furnishings). The 10-semester program includes 53 courses. After the sixth semester, there is a *salida lateral* (lateral exit) to the intermediate degree of *técnico en restauración de bienes muebles* (technician in restoration of historical furnishings). (See Table 25.) Included in the curriculum are obligatory visits to places of interest, conferences, and short courses with foreign specialists. Both the *técnico* and the *licenciatura* programs require a thesis and a professional exam for graduation.

Unlike many SEP institutions, the ENCRM uses the following descriptive grading system: MB/*muy bien* (very good), B/*bien* (good), S/*suficiente* (sufficent) and NA/*no acreditada* (not passed).

The Centro Interamericano de Capacitación y Museografía/CICM (Interamerican Center of Museum Science Training) is another educational entity located in the Churubusco Center with the ENCRM. Founded in 1972 to prepare museum specialists, it offers an intensive 9-month course, from September to June, in museum science. Admission to the program requires the completion of an upper secondary program considered preparatory for higher education and museum experience.

The Centro Interamericano de Restauración de Bienes Culturales/CIRBC (Interamerican Center for the Restoration of Cultural Goods), also located in the Churubusco Center, was founded in 1972. Its objective is to help persons already acquainted with the field to work effectively in their own communities. It offers two programs of study, one of which requires a *licenciatura* for entry. The other, which requires the completion of an upper secondary program considered preparatory for higher education and related experience, is a 9-month *especialidad en bienes muebles* (specialization in historical furnishings) with options in printing and ceramics.

TERTIARY INSTITUTIONS DEPENDENT ON OTHER MINISTRIES AND DEPARTMENTS

Colegio Superior de Agricultura Tropical/CSAT
(Higher College of Tropical Agriculture)

The CSAT is a federal institution dependent on the Secretaría de Agricultura y Recursos Hidráulicos (Ministry of Agriculture and Water Resources). It is located in the city of H. Cárdenas in Tabasco, 11 meters above sea level in a hot, humid climate. The institution offers programs of study at both the undergraduate and graduate levels. Admission to the undergraduate program requires completion of a general or technical upper secondary program considered preparatory for higher education in addition to an entrance exam. Preference is given to students who come from Mexico's tropical areas. All students receive scholarships for study.

The basic *licenciatura* degree awarded is the *ingeniero agrónomo* (agricultural engineer) with specializations in *agricultura tropical* (tropical agriculture), *ciencia animal* (animal science), and *parasitología agrícola* (agricultural parasitology). The academic year, which begins in early August and ends in mid-May, is divided into two semesters of 18 weeks each. The program of study, which includes 57 courses, is 10 semesters in length. The first six semesters, common to all three specializations, include courses in botany, chemistry, ecology, economics, genetics, mathematics, microbiology, philosophy, physics, sociology, statistics, and zoology, in addition to general agricultural courses. The next four semesters include courses specific to the specialization. A thesis seminar is included in the ninth and tenth semesters.

All of the professors at the school are fulltime, and 42% have master's or doctoral degrees. Grading is on a scale of 1 to 10 with 6 the lowest passing grade. Approximately 65% of the undergraduate students finish their coursework.

Escuela de Aviación Naval (School of Naval Aviation)

The School of Naval Aviation is dependent on the Secretaría de Comunicaciones y Transportes/SCT (Ministry of Communications and Transportation). It offers two *licenciatura* programs of study leading to the degrees of *piloto aviador naval* (naval aviation pilot) and *piloto helicopterista naval* (naval helicopter pilot). Both programs are four years in length. (See Table 26.) The program is fairly evenly divided between academic courses and courses in the area of specialization.

Table 26

Licenciatura Program Leading to Degree of _Piloto Aviador Naval_ (Naval Aviation Pilot), Escuela de Aviación Naval (School of Naval Aviation)

First Year		
Biology I	Handling of Firearms	Military Legislation I
Chemistry I	History of Aeronautics I	Military Morale
English I	Intro. to Astronomy	Physics I
Geography of Mexico	Mathematics I	Technical Drafting I
		Basic Training & Physical Education
Second Year		
Aerodynamics I	English II	Physics II
Air Force History	Explosives & Ballistics	Psychology
Arms & Services Tactics	Handling of Firearms	Technical Drafting II
Biology II	Mathematics II	Basic Training & Physical Education
Chemistry II	Military Legislation II	
Third Year		
Aerodynamics II	English III	Meteorology I
Air Navigation I	Handling of Firearms	Physiology of Flight
Armaments, Shooting & Bombing Theory, & Aerial Photography	Language & Literature	Tactics of Aviation Branches
	Mathematics III	Basic Training & Physical Education
Fourth Year		
Aeronautic Radio Communications	General Air Tactics	Meteorology II
Air Legislation	Handling of Firearms	Introduction to Mexican Law
Air Navigation II	Intro. to Philosophy	Technical English
	Irregular Warfare	Basic Training & Physical Education

Source: Transcript from the Escuela de Aviación Naval.

Escuela de Salud Pública (School of Public Health)

The School of Public Health is a federal institution dependent on the Secretaría de Salubridad y Asistencia/SSA (Ministry of Health and Welfare). At one time the school offered a program leading to a *licenciatura en salud pública* (licentiate in public health). The institution now offers primarily graduate programs and short courses for physicians and other health professionals. It also offers several technical programs, and though none are complete *licenciatura* programs, three could be considered to be at the undergraduate level: public health nursing, nutrition, and statistics.

These three programs are each 10 months in duration and require approximately 40 hours per week. The 10 months are divided into four periods. The public health nursing program requires completion of an upper secondary nursing program and one year's experience for admission; the programs in nutrition and statistics usually require the completion of an upper secondary program considered preparatory for higher education.

The public health nursing program is referred to as a *curso de enfermería en salud pública*. The program is 50% academic and 50% fieldwork. The first period covers general principles and basic methodology of public health; in the second period, the functions of public health are analyzed. The third period is devoted to the analysis of public health problems in Mexico and Latin America. During the fourth period, students apply the knowledge acquired through fieldwork to the investigation of health problems and their solution.

The program in nutrition leads to the intermediate degree of *técnico en nutrición* (technician in nutrition). The program is 70% academic and 30% supervised fieldwork. During the first period, the general principles of public health and nutrition are reviewed. The second and third periods are devoted to specific aspects of human nutrition, to factors that influence it, and to recommended strategies for promoting nutrition. Parallel to the academic instruction in the first three periods and during the fourth period, students carry out related fieldwork.

The program in statistics leads to the intermediate degree of *estadístico en salud pública* (public health statistician). The program is 62% academic and 38% fieldwork. The first period is dedicated to principles and techniques of descriptive statistics; the remaining three periods include a careful review of the elements of statistical inference aimed at enabling the graduate to design descriptive and analytical research. The fieldwork focuses on public health statistics as they relate to institutions and the planning, execution, and analysis of a research project.

Escuela Nacional de Capacitación Aduanera (National School of Customs Training)

The National School of Customs Training is a federal institution dependent on the Secretaría de Hacienda y Crédito Público (Ministry of Finance and Public Credit). It offers a single program of study leading to a *licenciatura en vista aduanal* (licentiate in customs inspection). Admission to the 8-semester program requires completion of an upper secondary program considered preparatory for higher education and an entrance exam. Grading is on a scale of 10 with 6 the lowest passing grade.

Escuela Náutica "Cap. de Alt. Antonio Gómez Maqueo" (Nautical School "Cap. de Alt. Antonio Gómez Maqueo")

The Nautical School "Cap. de Alt. Antonio Gómez Maqueo" is a federal institution dependent on the Secretaría de Comunicaciones y Transportes/SCT (Ministry of Communications and Transportation). The school offers two 6-semester *licenciatura* programs leading to the degrees of *ingeniero geógrafo* (geographic engineer) and *ingeniero mecánico naval* (naval mechanical engineer). A third *licenciatura* program, lead-

ing to the degree of *maquinista naval de la marina mercante* (naval machinist of the merchant marine), is four years in length.

Escuela Náutica Mercante de Tampico (Merchant Marine School of Tampico)

The Merchant Marine School of Tampico is a federal institution dependent on the Secretaría de Comunicaciones y Transportes/SCT (Ministry of Communications and Transportation). The school offers two 8-semester *licenciatura* programs leading to the degrees of *ingeniero geógrafo naval* (naval geographic engineer) and *ingeniero mecánico naval* (naval mechanical engineer).

Escuela Náutica Mercante "Fernando Siliceo"
(Merchant Marine School "Fernando Siliceo")

The Merchant Marine School "Fernando Siliceo" is a federal institution dependent on the Secretaría de Comunicaciones y Transportes/SCT (Ministry of Communications and Transportation). The school offers two 8-semester *licenciatura* programs leading to the degrees of *oficial de cubierta* (deck officer) and *oficial de máquinas* (machinery officer). Admission to both programs requires the completion of an upper secondary program considered preparatory for higher education with a concentration in physics-mathematics. Grading is on a scale of 10 with 6 the lowest passing grade.

Heroica Escuela Naval Militar "Antón Lizardo"
(Heroic Naval Military School "Antón Lizardo")

The Heroic Naval Military School "Antón Lizardo" is dependent on the Secretaría de la Marina (Ministry of the Navy). Located near the port of Veracruz, the school was founded in 1897 by presidential decree. "Heroic" was added to its name in 1949 in recognition of its resistance to U.S. forces in 1914.

The school offers three *licenciatura* programs, leading to the degrees of *oficial del cuerpo general, ingeniero en ciencias navales* (general corps officer, naval sciences engineer), *oficial del cuerpo de infantería de marina, ingeniero hidrógrafo* (naval infantry corps officer, hydrography engineer), and *oficial piloto aviador naval* (naval aviation pilot officer). All three programs are eight semesters in duration. The first two semesters consist of a common core of courses for all three programs. The third and fourth semesters are also the same for the general corps officer and naval aviation pilot officer programs.

The general corps officer program concentrates on the study of nautical and naval sciences; courses in mechanics, electricity, and electronics, as applied to the operation of ships and naval installations, are also included. The naval infantry corps officer program emphasizes the administration and command of marine infantry units but also includes topography, hydrography and oceanography. The naval aviation pilot officer program emphasizes the study of naval aeronautic science.

Admission to one of the undergraduate programs requires completion of an upper secondary program considered preparatory for higher education with a concentration in physical-mathematical sciences, and an entrance exam. (See Chapter III.)

Instituto de Formación Profesional (Institute of Professional Training)

The Institute of Professional Training is a federal institution dependent on the Procuraduría General de Justicia del Distrito Federal (Attorney General of the Federal

District). Although primarily a graduate-level institution, it does offer technical programs of study at the upper secondary and undergraduate levels. At the undergraduate level, it offers a one-year program leading to the intermediate degree, *técnico en criminalística* (criminology technician). Admission to the program requires the completion of an upper secondary curriculum considered preparatory for higher education, as well as an entrance exam.

UNIVERSIDAD DEL EJÉRCITO Y FUERZA AÉREA (University of the Army and Air Force)

The University of the Army and Air Force was founded when the Secretaría de la Defensa Nacional/SDN (Ministry of National Defense) consolidated its four tertiary institutions into one. These four schools, the Escuela Médico Militar (Military Medical School), the Escuela Militar de Odontología (Military School of Dentistry), the Escuela Militar de Ingenieros (Military School of Engineers) and the Escuela Superior de Guerra (Higher School of War), along with the Escuela de Graduados de Servicio de Sanidad (Graduate School of Health Service), now comprise the five components of the university. Three of them offer undergraduate programs. The Military Medical School offers a 6-year *licenciatura* program leading to the degree of *médico cirujano y partero* (medical doctor and obstetrician). The Military School of Dentistry offers a single *licenciatura* program leading to the degree of *cirujano dentista* (dentist). The Military School of Engineers offers five 6-year *licenciatura* programs leading to the degree of *ingeniero* (engineer) with specializations in chemistry, communications and electronics, construction, electricity, and mechanics.

Private *Libre* (Free or Independent) Tertiary Institutions

The highly coveted status of *libre* (free or independent) is granted by presidential decree to a very select group of institutions of higher learning. There are currently only eight such institutions in Mexico. Like most other private institutions in Mexico, free and independent institutions are relatively young, established for the most part since 1940.[34] Despite the brevity of their existence, they are considered excellent institutions.

Free or independent status allows institutions to name their own authorities and to exercise complete freedom in developing their programs of study, all of which have official validity. Such institutions also have the authority to issue their own official *certificados* (transcripts) and *títulos* (degrees), which normally mention the number and/or date of the *decreto presidencial* (presidential decree) granting free status. These institutions have the right to establish programs of study in any location in Mexico and, indeed, the Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies) has established 14 branches outside Monterrey. However, private institutions with free or independent status do not have authority to incorporate programs offered by other private institutions.

Some institutions in this category actually include the designation *libre* (free or independent) in their names. On the other hand, not all institutions

34. Castrejón Diez, p. 304.

that are called *libre* actually have been granted free status by presidential decree. For example, the Escuela Libre de Psicología (Free School of Psychology) is a private institution whose programs of study are incorporated by the Universidad Autónoma de Chihuahua (Autonomous University of Chihuahua). The Escuela Libre de Jurisprudencia de Sinaloa (Free School of Jurisprudence of Sinaloa) is a private institution recognized by the state of Sinaloa.

These free and independent institutions generally are more specialized than most universities. Perhaps for this reason, none of them are called universities. Instead, they are named *centros* (centers), *colegios* ("colleges"), *escuelas* (schools) and *institutos* (institutes). Some of them offer only one program of study. The Escuela de Ingeniería Municipal (School of Municipal Engineering) offers a single *licenciatura* program leading to the degree of *ingeniero municipal* (municipal engineer). The undergraduate program of the Escuela Libre de Derecho (Free School of Law) leads to a *licenciatura en derecho* (licentiate in law). The Escuela Libre de Homeopatía de México (Free School of Homeopathy of Mexico) offers a *licenciatura* program leading to the degree of *médico homeópata cirujano y partero* (homeopathic physician and obstetrician). Other institutions such as the Centro de Investigación y Docencia Económica, A.C. (Center of Economic Research and Teaching), El Colegio de México (the College of Mexico), and El Colegio de Michoacán (the College of Michoacan) offer primarily graduate study. Even the Instituto Tecnológico Autónomo de México/ITAM (Autonomous Technological Institute of Mexico), which offers more than one undergraduate program of study as well as graduate study, concentrates on a few fields of study related to business or economics. Only ITESM offers as many and varied fields of study as most universities.

DETAILED DESCRIPTION OF TWO PRIVATE *LIBRE* INSTITUTIONS

Instituto Tecnológico Autónomo de México/ITAM (Autonomous Technological Institute of Mexico)

Founded in 1946 and granted free or independent status in 1963, ITAM at first offered only a *licenciatura* program in economics. Later, *licenciatura* programs in applied mathematics, business administration, law, public accounting, and social sciences were added. Today graduate programs in business administration and economics are also offered. There are no upper secondary level programs.

In addition to an entrance examination, admission to a *licenciatura* program at ITAM requires completion of an upper secondary program considered preparatory for higher education or an upper secondary teacher training program. The school year, which begins in August and ends in May, is divided into two semesters of 17 weeks each. There is also a 6-week *curso de verano* (summer session) in which a limited number of courses are offered on an intensive basis to allow students to finish their programs earlier or to make up courses they have failed.

Courses in specific areas are grouped into the following academic *departamentos* (departments): Accounting, Administration, Computer Science, Economics, General Studies, Law, Mathematics, and Social Sciences. All of the *licenciatura* programs include courses from several different departments. Courses at ITAM are designed to

fit not only into the various programs of study, but also into the sequence of courses offered by each department.

All six *licenciatura* programs are eight to nine semesters in duration. A course credit system is used in which 2 credits represent every semester hour of class. Each program includes approximately 350 credits. The structure of the programs is based on three *etapas* (stages). These stages are different from other types of core courses in that each stage is not restricted to specific semesters. Instead, courses from different stages may be taken during the same semester.

The first stage includes a number of courses of a general nature, primarily in the humanities, mathematics, the sciences, and the social sciences. Designed to increase students' creativity, reasoning capability, and facility of expression, the first stage courses include study of political and social ideas that acquaint the student with the principal phases of development of the Western world. Also included are courses dealing with problems created by the rapid development of science and technology. Finally, the first stage includes courses in research methods which train students in the use of scientific methods and techniques, particularly in relation to social and economic problems. (See Table 27 for a sample program of study.)

The second stage is comprised of theoretical courses, relevant to the field of study. In the third and final stage, there is even more specialization within the field of study. Students are allowed to choose from among selected elective courses. In some fields the electives are organized into groups, each of which relates to a specialization within the field of study.

Completion of a thesis and a professional examination are normally required for an ITAM degree, and students may include a thesis seminar in their programs. However, students may choose alternatives to the thesis requirement such as a report on practical work experience and a professional exam, or the completion of 50% of a graduate program and a professional exam.

Grading is on a scale of 1 to 10 with 6 the lowest passing grade. There are *exámenes parciales* (partial examinations) as well as the final exam. Students who miss or fail the *examen ordinario* (regular final exam) may take an *examen extraordinario* (extraordinary exam).[35]

Table 27

Licenciatura en Economía* (Economics), ITESM and ITAM

ITESM			ITAM	
First Semester	hours (theory)	units	First Semester	credits
Business Law I	3	8	Economics I	6
Intro. to Economics	3	8	Mathematics I	9
Mathematics I	3	8	Mexican Judicial Institutions I	6
Psychosocial Sciences, Elective I	3	8	Political & Social Ideas & Institutions I	6
Research Methodology	3	8	Research Methods & Techniques	6
Theory of Administration I	3	8	Scientific & Technical Problems I	6

35. T. Noel Osborn, *Institutional Report on Anáhuac University* (N.Y.: Institute of International Education, April 1976).

Second Semester		
Business Law II	3	8
Economic Theory I	3	8
Intro. to Accounting I	3	8
Mathematics II	3	8
Psychosocial Sciences, Elective II	3	8
Theory of Administration II	3	8

Third Semester		
†Computer Programming, Lab I (3 hrs)	0	4
Cultural Elective	3	8
Economic Theory II	3	8
Intro. to Accounting II	3	8
Mathematics III	3	8
Production	3	8
Public Law	3	8

Fourth Semester		
†Computer Programming, Lab II (3 hrs)	0	4
Cost Accounting	3	8
Economic Theory III	3	8
Human Resources Admin.	3	8
Law of Work	3	8
Marketing	3	8
Probability	3	8

Fifth Semester		
Administrative Accounting	3	8
Computation Themes for Economists	3	8
Macroeconomic Analysis I	3	8
Market Research & Anal.	3	8
†Market Research Lab (3 hrs)	0	4
Microeconomic Analysis I	3	8
Statistics Appld. to Bus.	3	8

Sixth Semester		
Analysis of Financial States	3	8
Econometrics I	3	8
Macroeconomic Analysis II	3	8
Microeconomic Analysis II	3	8
†Microeconomics Lab (3 hrs)	0	4
Quantitative Methods	3	8
Professional Elective I	3	8

Second Semester	
Accounting	6
Economics II	6
Mathematics II	9
Political & Social Ideas & Institutions II	6
Scientific & Technical Problems II	6
Elective	6

Third Semester	
Economics III	6
Economics V	6
Mathematics III	8
Political & Social Ideas & Institutions III	6
Statistics I	8
Elective	6

Fourth Semester	
Economics IV	6
Mathematics IV	8
Monetary Theory	6
Statistics II	6
Elective	6
Elective	6

Fifth Semester	
Economic History	6
Economics VI	6
Mathematics V	8
Monetary Policy	6
Statistics III	6
Elective	6

Sixth Semester	
Econometrics	6
Economics VII	6
Economics VIII	6
Economic Thought I	6
International Economics I	6
Mathematics VI	8

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Seventh Semester			Seventh Semester	
Econometrics II	3	8	Economic Thought II	6
Financial Administration	3	8	International Economics II	6
International Business	3	8	Project Analysis & Evaluation	6
Money & Banking	3	8	Theory of Public Finance	6
Professional Elective II	3	8	Elective	6
Public Finance	3	8	Elective	6
Eighth Semester			**Eighth Semester**	
Advd. Econ. Seminar	3	8	Economic Development	6
Economic Development	3	8	Economics of Mexico	6
Professional Elective III	3	8	Models of Growth	6
Project Evaluation	3	8	Income Distribution	6
Quantitative Methods in Administration	3	8	Thesis Seminar	6
Seminar on Economic Problems of Mexico	3	8	Social Service Component	20
			Thesis & Professional Exam	36
Totals:	156	400	Total:	354

*ITESM—Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Institute of Technology and Higher Studies); ITAM—Instituto Tecnológico Autónomo de México (Autonomous Technological Institute of Mexico).

†Courses marked with a dagger have a 3-hour lab component.

Source: *Instituto Tecnológico y de Estudios Superiores de Monterrey Planes de Estudio 1979; Información General, Licenciatura, Instituto Tecnológico Autónomo de México.*

Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies)

Founded in 1944, ITESM was granted free or independent status in 1952. Prior to 1952, its programs of study were recognized by the Secretaría de Educación Pública/SEP (Ministry of Education). ITESM is a member of two U.S. organizations: the Southern Association of Colleges and Secondary Schools, and the Association of Texas Colleges.

ITESM originally was located only in Monterrey; however, the following branches (called *unidades* or units) have been established in various sites outside Monterrey: Unidad Chihuahua in Nombre de Dios, Chihuahua; Unidad Ciudad de México in Mexico City, D.F.; Unidad Estado de México in Atizapán de Zaragoza, Estado de México; Unidad Irapuato in Irapuato, Guanajuato; Unidad Laguna in Torreón, Coahuila; Unidad León in León, Guanajuato; Unidad Noroeste-Guaymas in Guaymas, Sonora; Unidad Noroeste-Obregón in Obregón, Sonora; Unidad Querétaro in Querétaro, Querétaro; Unidad Saltillo in Saltillo, Coahuila; Unidad San Luis Potosí in San Luis Potosí, San Luis Potosí. Three extensions of the Mexico City unit have also been established in Hermosillo, Sonora; Mérida, Yucatán; and Guadalajara, Jalisco.

ITESM offers programs of study at the upper secondary, undergraduate, and graduate levels. All ITESM undergraduate programs lead to the *licenciatura*. These programs, which are offered in one of the five *divisiones* (divisions) of ITESM, are as follows:

División de Administración y Ciencias Sociales (Division of Administration and Social Sciences)—business administration; economics; marketing; personnel administration; public accounting.

División de Ciencias Agropecuarias y Marítimas (Division of Agricultural and Maritime Sciences)—biochemical engineering; agricultural engineering, with specializations in administration, animal husbandry, parasitology, and production.

División de Ciencias de la Salud (Division of Health Sciences)—medicine.

División de Ciencias y Humanidades (Division of Science and Humanities)—chemical sciences; Spanish letters; sports direction; systems of administrative computation; engineering (computation systems, electronic systems).

División de Ingeniería y Arquitectura (Division of Engineering and Architecture)—architecture; engineering (chemical administration, chemical and systems, civil, electrical, electronic and communications, industrial and systems, mechanical administration, and mechanical electrical).

Approximately 30 academic departments, such as architecture, mathematics, and physics, offer the courses that comprise the various programs of study. Each program of study includes courses from several departments.

Admission to an undergraduate program at ITESM basically requires completion of an upper secondary program considered preparatory for higher education and the required entrance exam, which is the *Prueba de Aptitud Académica*/PAA.[36] The minimum scores accepted are 550 on the verbal part and 610 on the mathematical part of the test. Students completing ITESM's own *bachillerato* program with an overall average of 7 out of 10 in all courses attempted are afforded *pase automático* (automatic access) to programs at the undergraduate level. All students coming from upper secondary programs at other institutions must pass, in addition to the PAA, tests in Spanish composition and reading comprehension of English texts or take courses in those subjects.[37]

None of the undergraduate programs at ITESM require a particular academic concentration at the upper secondary level; however, additional examinations to determine the need for remedial courses are required in some fields of study. The following undergraduate programs require that applicants pass an *examen de selección* ("placement" examination) prior to enrolling: all programs in the Division of Engineering and Architecture, as well as computation systems engineering, electronic systems engineering, the physical sciences, and the chemical sciences. This "placement" exam covers algebra, analytical geometry, differential and integral calculus, geometry, physics and trigonometry. Those who fail this test are required to enroll in a remedial training program that may be completed in one semester or one intensive summer session.[38]

ITESM also requires an *examen de evaluación de matemáticas* (mathematics evaluation examination) for students entering programs of study in either the Division of Administration and Social Sciences or the Division of Agricultural and Maritime Sciences. Students who fail this test are required to take a remedial algebra course during the first semester.[39]

The academic year, which begins in August and ends in May, is divided into two semesters. There is also a summer session. A system of credits is used in which a credit is referred to as an *unidad* (unit). The value of a course in units represents the total number of hours the student is expected to devote to a course, including hours spent in class, in the laboratory or workshop, and in outside study. The exact number

36. This refers to the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board offered in Spanish. It is scored the same way as the SAT.

37. These courses, Uc-98, *redacción en español*, and Uc-99, *comprensión de lectura de textos en inglés*, are identified as remedial in the ITESM catalog.

38. These courses, F-01, *física* and Ma-01, *matemáticas*. are identified as remedial in the ITESM catalog.

39. This course, Ma-10, *algebra*, is identified as remedial in the ITESM catalog.

of hours spent in class or in the laboratory cannot be determined from the unit value of the course. Three semester hours of academic or theoretical coursework are usually equivalent to 8 units. Two or three laboratory semester hours are usually equivalent to 4 units. Thesis seminars, in which two hours are spent in class, are often worth 12 units.

Most *licenciatura* programs at ITESM are eight or nine semesters in duration and include from 120 to 213 semester hours; however, the program in medicine is a 12-semester program which includes 404 semester hours. In terms of units, most programs vary from 320 to 450 units, with 624 for medicine. All of the programs in the Division of Administration and Social Sciences share a common core of courses for the first four semesters. (See Table 27 for the *licenciatura* program in economics.)

Instead of writing a thesis to complete the degree requirements, most students at ITESM choose to enroll in a seminar or take one or two graduate courses. For this reason, completion of the coursework and the award of the degree are almost always simultaneous. Grading is on a scale of 10 with 7 the lowest passing grade.

Private Tertiary Institutions Whose Programs Have Official Validity

The second category of private institutions of higher education in Mexico includes all those that have not been granted free or independent status but that have programs which have been granted official validity. Except for restrictions on primary, lower secondary, worker and teacher education, private institutions are free to operate and offer any program of study. These programs, however, do not have inherent validity; it must be sought for each individual program of study. (For a more complete discussion of official validity, see the first part of this chapter.)

The category of private institutions whose programs have been granted official validity is by no means a homogeneous one. Programs receive validity in two ways: through recognition by the federal Secretaría de Educación Pública/SEP (Ministry of Education), another federal ministry, or a state ministry of education, or by incorporation into one of the public autonomous, public state, or federal institutions dependent on the government. Through recognition or incorporation, an institution usually acquires characteristics of the institution or ministry that incorporates or recognizes its programs of study. Thus, individual private institutions may actually have more in common with certain categories of public institutions than with each other.

Since official validity usually is awarded to individual programs of study rather than to entire institutions, an institution can have more than one source of official validity for its programs of study. Some programs may even have two types of validity. For example, the Instituto Tecnológico y de Estudios Superiores de Occidente/ITESO (Institute of Technology and Higher Studies of the West) already had some of its programs incorporated into the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico) when the SEP granted "global" or comprehensive recognition to all its programs of study. By the same token, an institution may have some programs without validity of either type. This situation arises with recently created or unusual programs of study as well as with

programs which lead to professions that do not require registration and a professional credential. (See Registration of Graduates, this chapter.)

The number of private institutions with programs that have official validity is large (over 100 institutions) and is still growing. Most of these institutions have been established since 1940 and the number has doubled in the last 10 years, but most are small, with an undergraduate enrollment of less than 1,000. The largest institution in terms of enrollment is the Universidad Autónoma de Guadalajara/UAG (Autonomous University of Guadalajara), which had an undergraduate enrollment of 16,632 in 1979-80. These institutions, excluding private higher teacher training institutions, accommodate only 14% of all students enrolled in institutions of higher education.[40]

The category of private institutions with official validity includes institutions that offer programs in diverse fields of study as well as more specialized institutions. Many of them concentrate on specific areas of study such as liberal arts or teacher training; others offer only a single program of study.

Institutions whose programs have been recognized by the SEP or by a state ministry of education generally follow policies and practices established by the recognizing ministry; often their programs are similar to those offered by the ministry's own institutions. This is not true in all instances, however, since there are various types of recognition. In addition to recognition of individual programs of study, "global" recognition may be granted to all programs of study offered by an institution, including programs not yet instituted. State ministries of education also may award a *libre* (free or independent) status which, like the federal free status, grants official validity to any program of study offered by the institution. Official *certificados* (transcripts) and *títulos* (degrees) issued for recognized programs of study usually must have the signature of an official of the recognizing institution. However, state free or independent institutions may issue transcripts without this signature.

Incorporated programs of study are usually identical to or at least very similar to programs offered by the incorporating institution. Any of the public autonomous and public state institutions and some of the federal institutions may incorporate other programs of study. Many private institutions have programs of study incorporated into UNAM. (See Table 28 for a list of institutions and programs of study incorporated into UNAM.) Incorporation is never awarded to an entire institution, only to individual programs of study, and official transcripts are issued not by the private institution but by the incorporating institution.

Like other private institutions of higher education, private *escuelas normales superiores* (higher teacher training schools) must seek official validity for their programs of study. However, unlike other private institutions, private tertiary-level teacher training institutions, according to the 1917 Constitution, may not begin operation until validity is granted.

The Mexican Constitution has established another difference between tertiary-level teacher training institutions and other kinds of tertiary institutions by granting the federal government extensive power over all kinds of

40. ANUIES, *La Planeación de la Educación Superior en México*, p. 33.

Table 28

Institutions of Higher Education with Undergraduate Programs Incorporated into the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico)

Centro Universitario de Mazatlán: Psychology.

Centro Universitario Kennedy: Administration; Accounting.

Escuela de Trabajo Social del Instituto Miguel Hidalgo: Social Work.

Escuela de Trabajo Social de Tijuana: Social Work.

Escuela de Trabajo Social "Vasco de Quiroga": Social Work.

Instituto Cuauhtlatohuac: Law.

Instituto Cultural Don Vasco, A.C.: Administration; Accounting.

Instituto Tecnológico y de Estudios Superiores de Occidente: Administration; Architecture; Accounting; Civil Engr.; Mechanical Electrical Engr.; Psychology.

Instituto Universitario de Ciencias de la Educación, A.C.: Pedagogy; Psychology; Sociology.

*Instituto Universitario de Norte: Dentistry.

Tecnológico Universitario de México: Administration; Accounting.

Universidad Anáhuac: Actuarial Science; Administration; Architecture; Accounting; Law; Economics; Civil Engr.; Mechanical Electrical Engr.; Psychology.

Universidad Autónoma de Guadalajara: Administration; Architecture; Visual Arts; Library Science; Biology; Accounting; Law; Graphic Design; Industrial Design; Economics; Nursing & Obstetrics; History; Civil Engr.; Mechanical Electrical Engr.; Chemical Engr.; Hispanic Languages & Lit.; Mathematics; Medicine; Dentistry; Pedagogy; Journalism; Psychology; Chemistry; Biological Pharmaceutical Chemistry; Social Work.

Universidad del Noreste: Medicine; Psychology.

Universidad del Nuevo Mundo: Accounting; Law; Graphic Design; Industrial Design; Philosophy; Mechanical Electrical Engr.; Psychology.

Universidad del Tepeyac: Law.

Universidad del Valle de México: Administration; Accounting; Law.

Universidad del Valle de México (Tlalpan): Administration; Accounting; Pedagogy; Psychology; Law.

Universidad Femenina de México: Law; Pedagogy; Psychology; Biological Pharmaceutical Chemistry; International Relations.

Universidad Intercontinental: Administration; Architecture; Accounting; Law; Philosophy; Pedagogy; Journalism & Collective Communication; Psychology.

Universidad La Salle, A.C.: Administration; Architecture; Accounting; Law; Philosophy; Civil Engr.; Mechanical Electrical Engr.; Chemical Engr.; Medicine; Biological Pharmaceutical Chemistry.

Universidad Lasallista Benavente: Law.

Universidad Latina, A.C.: Administration, Accounting.

Universidad Latinoamericana, S.C.: Administration; Accounting; Dentistry.

Universidad Motolinia: Law; Biological Pharmaceutical Chemistry.

Universidad Panamericana: Administration; Law; Economics; Philosophy; Mechanical Electrical Engr.; Pedagogy.

Universidad Tecnológica de México, S.C.: Dentistry.

Universidad Villa Rica: Administration; Accounting; Law.

*Appears to be Instituto Técnico Universitario del Norte but information is incomplete.
SOURCE: Universidad Nacional Autónoma de México. (computer print-out)

teacher training, and private tertiary-level teacher training institutions are obliged to follow the academic policies and programs prescribed by the SEP. Therefore, rather than incorporating their programs into another institution, many private tertiary teacher training institutions have their programs recognized by the SEP, others by state ministries of education. Programs of study are very similar at all tertiary teacher training schools; however, some state ministries are slower to adopt SEP policies than others.

EXAMPLES AND DESCRIPTIONS OF PRIVATE INSTITUTIONS WITH VARIOUS SOURCES OF OFFICIAL VALIDITY

CENTRO DE ENSEÑANZA TÉCNICA Y SUPERIOR/CETYS
(Center of Technical and Higher Education)

CETYS, founded in 1961, is financed by a non-profit organization, the Instituto Educativo del Noroeste, A.C. (Educational Institute of the Northwest). Originally located in Mexicali, the branches in Tijuana and Ensenada were established later. The three campuses offer programs of study at the upper secondary and undergraduate levels, as well as continuing education programs for executives and other professionals.

Recognition (and, therefore, validity) of CETYS programs was first granted by the SEP in 1962. In 1974, this validity was extended by the SEP to all programs offered by CETYS at any educational level and in any city of Mexico.

The academic year at CETYS is divided into two semesters, August to December and January to June. Undergraduate programs at the three campuses are offered in one of two *escuelas* (schools): the School of Accounting and Administration, and the School of Engineering. The School of Accounting and Administration offers *licenciatura* programs in business administration, human resources administration, industrial psychology, marketing administration, and public accounting. A *licenciatura* program in administrative computational systems is offered only in Tijuana. In the School of Engineering, *licenciatura* programs are offered in computational sciences, industrial engineering, industrial engineering in systems, and mechanical engineering. All programs are eight semesters in duration and vary from 157 to 223 total semester hours. Some programs utilize a credit system based on the ANUIES guidelines (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of practical or lab coursework). A credit is referred to as an *unidad* (unit).

Grading is on a scale of 10 with 7 the lowest passing grade. (See Grading earlier in this chapter.) CETYS estimates that 85% of their students finish the coursework—5% with an average of 10, 20% with an average of 9, 50% with an average of 8, and 25% with an average of 7.

Centro Internacional de Adiestramiento de Aviación Civil/CIAAC
(International Training Center in Civil Aviation)

The CIAAC, a private institution whose programs of study are recognized by the Secretaría de Comunicaciones y Transportes/SCT (Ministry of Communications and Transportation), does not offer any *licenciatura* programs of study. It does, however, offer several short training programs that require for admission the completion of an upper secondary curriculum considered preparatory for higher education. The vocational qualifications awarded, as well as the duration of each course, are the following: *controlador de tránsito aéreo* (air traffic controller)—9 months; *despachador de aeronaves* (airplane dispatcher)—9 months; *mecánico en helicópteros y motores* (helicopter and motor mechanic)—13 months; *mecánico en motores y planeadores* (glider and motor mechanic)—13 months; *mecánico especialista en accesorios-radios* (mechanic specialist in accessories-radio)—18 months; *auxiliar meteorológico* (assistant meteorologist)—9 months; *piloto aviador de ala fija* (commercial aircraft pilot)—14 months.

Escuela de Periodismo "Carlos Septién García"
(School of Journalism "Carlos Septién García")

Founded in 1949, the School of Journalism "Carlos Septién García" offers a single *licenciatura* program in *periodismo* (journalism). It also offers a vocational upper secondary program leading to the qualification of *redactor y reportero gráfico* (graphic reporter and editor), as well as a practical correspondence course in journalism. The undergraduate program is recognized by the SEP.

The school year, which begins in September and ends in June, is divided into two semesters. The *licenciatura* program lasts eight semesters and includes 140 semester hours through the seventh semester. Included in the study plan are general courses in composition, history, Mexican and Spanish literature, sociology, philosophy, and courses related more specifically to newspaper, radio, and television reporting. The eighth semester is devoted to completion of the thesis and to social service; no specific number of semester hours is allotted for these activities. Admission to the undergraduate program requires completion of an upper secondary program considered preparatory for higher education and an entrance exam.

Grading is based on a scale of 10 with 6 the lowest passing grade. The final grade in each course is based on written work, oral presentations, bibliographic research, and class participation as well as the final exam.

Escuela Normal Superior de la Federación de Escuelas Particulares/ENS-FEP
(Higher Normal—Teacher Training—School of the Federation of Private Schools)

Like other higher teacher training schools, the ENS-FEP offers undergraduate programs of study to train teachers for the nation's *escuelas secundarias* (lower secondary schools) and for *escuelas normales* (upper secondary level teacher training institutions). Admission to one of the undergraduate programs requires the completion of an upper secondary program considered preparatory for higher education or the completion of an upper secondary level teacher training program. The school estimates that 50% of its students are graduates of upper secondary teacher training programs.

As a result of the 1973 Federal Education Law, the undergraduate programs of the ENS-FEP were reorganized, and the name of the degree awarded was changed from the *maestro* to the *licenciatura* in 1976. (See Chapter VI for a detailed description of the development of teacher training.) The *licenciatura* program, like the former *maestro* program, is four years in length. The *maestro* program included 23 year-long courses, while the *licenciatura* program includes 48 semester-long courses. The programs of study leading to the *maestro* concentrated on a particular lower secondary subject,

such as biology. (See sample document 14 in Appendix D.) The reorganized curriculum reflects the needs of the current lower secondary curriculum. Specializations are offered in the following areas rather than in individual subjects: *ciencias naturales* (natural sciences), *ciencias sociales* (social sciences), *español* (Spanish), *matemáticas* (mathematics), *pedagogía* (pedagogy), and *psicología educativa* (educational psychology).

The *licenciatura* programs are offered in two modes. In addition to the *curso ordinario* (regular program) which involves eight semesters of study, a *curso intensivo* (intensive program) is offered exclusively for working teachers from outside Mexico City. The intensive program allows teachers who are working without a *licenciatura* the opportunity to earn a degree by studying intensively for 1½ months each summer for six summers. Eight subjects are covered each summer.

Grading is on a scale of 10 with 6 the lowest passing grade. Student evaluation is based on *unidades* (units) into which each course is divided. Each course includes at least four units. Examinations offered after each unit are averaged with the final examination grade to yield the course grade. Students who fail or miss the final exam or who lose the right to take the final exam through excessive absences may take an *examen extraordinario* (extraordinary examination). The *examen a título de suficiencia* is an examination used to establish transfer credit. The type of examination taken is indicated on the transcript.

Instituto Superior de Ciencia y Tecnología de la Laguna, A.C./ISCYTAC
(Higher Institute of Science and Technology of La Laguna)

The ISCYTAC offers only five *licenciatura* programs, all of which were recognized by the state of Durango in 1977. Each program is offered in a separate *escuela* (school). Admission requires the completion of an upper secondary program considered preparatory for higher education as well as a personal interview with the director of the school which offers the program.

Schools of Architecture, Civil Engineering, Graphic Design, Information Sciences, and Psychology offer *licenciatura* programs leading to the degrees of *arquitecto* (architect), *ingeniero civil* (civil engineer), and *licenciaturas* in *diseño gráfico, ciencias de la información,* and *psicología,* respectively. All of the programs are eight semesters in duration except the one in architecture which is nine. Each program includes between 48 and 64 individual courses.

Two of its more unusual programs are those in information sciences and graphic design. The program in information sciences includes courses in algebra, economics, English, literature, psychology, Spanish, and statistics as well as courses in audiovisual systems, cinematography, journalism, mass communications, and public relations. The program in graphic design includes four courses in mathematics and a course in geometry and economics as well as courses in advertising, audiovisual techniques, drawing, photography, radio, television and film, and typesetting.

Grading is on a scale of 1 to 10 with 7 the minimum passing grade.

Instituto Superior de Cultura y Arte de Monterrey/ISCAM
(Higher Institute of Culture and Art of Monterrey)

The ISCAM offers a single undergraduate program leading to the *licenciatura en diseño de interiores* (licentiate in interior design). This program of study is incorporated by the Universidad Autónoma de Nuevo León/UANL (Autonomous University of Nuevo León). Unlike most incorporated programs of study, this program does not resemble a similar program offered at the incorporating institution, since UANL does not offer an undergraduate program in interior design.

Admission to the undergraduate program at ISCAM requires completion of an upper secondary program considered preparatory for higher education. The program consists of eight semesters of study, and is comprised of courses from four different areas. The Area of Design includes courses that promote the development of creativity, such as drawing, graphic design, interior design, publicity design, and visual education. The Area of Theory and Culture covers subjects that provide a general base of knowledge, such as design theory, esthetics, ethics, history of art, history of culture and human relations. The Area of Construction and Administration includes courses such as administration, costs and budgets, decorative techniques and materials, design and construction of furniture, and plastics techniques, which allow students to apply their knowledge in practical projects. The Area of Means of Representation includes constructive design, descriptive geometry, natural drawing, perspective and shading, and representation techniques.

Degree requirements include a practical project, a professional examination, and a period of social service.

Instituto Tecnológico y de Estudios Superiores de Occidente/ITESO (Institute of Technology and Higher Studies of the West)

Founded in 1957, ITESO had some of its programs of study incorporated into UNAM in 1968. In 1965, the SEP recognized the undergraduate programs in the sciences of communication and industrial relations. In 1976, the SEP granted "global" or comprehensive recognition of official validity to all ITESO programs. According to the *acuerdo* (agreement) by which official validity was granted, ITESO had met the SEP's standards in terms of personnel, buildings, and resources to offer higher studies. For this reason, it was granted freedom to develop its own programs of study; however, before putting each new program into operation, ITESO must receive authorization from the SEP.

The academic year, which begins in mid-August and ends in May, is divided into two semesters. There is also a *curso intensivo de verano* (intensive summer course) from mid-June to the end of July. Admission to an undergraduate program requires completion of an upper secondary program considered preparatory for higher education.

Licenciatura programs are offered in two divisions and three schools. The divisions are Ciencias Económicas-Administrativas (Economic-Administrative Sciences) and Ingeniería (Engineering); the schools include Arquitectura (Architecture), Ciencias de la Comunicación (Communication Sciences), and Psicología (Psychology). A credit system is used which follows the ANUIES guidelines (2 credits per semester hour of academic or theoretical coursework; 1 credit per semester hour of practical or laboratory coursework). The *licenciatura* programs, all of which are eight semesters in length, include from 170 to 240 total semester hours. The credit value of the programs varies from 320 to 404.

The *licenciatura* programs offered by the two divisions are as follows: Division of Engineering—*ingeniería civil* (civil engineering), *ingeniería electrónica* (electronic engr.), *ingeniería en sistemas computacionales* (engr. in computation systems), *ingeniería industrial* (industrial engr.), *ingeniería química administrativa* (chemical administrative engr.), and *ingeniería química de procesos* (chemical engr. of processes) (all of the engineering programs share a common core of courses during the first three semesters); Division of Economic-Administrative Sciences—*administración* (administration), *administración de empresas* (business administration), *contaduría pública* (public accounting), and *relaciones industriales* (industrial relations). The program in administration offers the following optional specializations: *agropecuaria* (general agriculture/animal husbandry), *computación* (computation), *educativa* (educational), and *mercado-*

tecnia (marketing techniques); all of these specializations share a common core of courses during the first three semesters.

The three schools offer one *licenciatura* program each, in architecture, communication sciences, and psychology.

Degree requirements include a thesis and professional examination as well as a period of social service which may be begun as early as the fifth semester. Any alternatives to the thesis which have been established by the SEP are allowed. (See Degree and Degree Requirements, this chapter.) Grading follows the official SEP system of 1 to 10 with 6 the lowest passing grade.

Tecnológico de Estudios Contables y Administrativos/TECA (Technological Institute of Accounting and Administrative Studies)

TECA offers two *licenciatura* programs, public accounting and business administration, both of which are recognized by the SEP. Admission requires completion of an upper secondary program considered preparatory for higher education.

Both programs are eight semesters in duration. The program which leads to the degree of *contador público* (accountant) includes 141 semester hours. The *licenciatura* program in *administración de empresas* (business administration) includes 137 semester hours. The two programs share a common core of courses for the first three semesters which includes courses in accounting, administration, economics, humanities, law, mathematics, and a thesis seminar the final semester. A thesis and professional examination are required for graduation.

Universidad Anáhuac (Anáhuac University)

Founded in 1964, Anáhuac University originally offered undergraduate programs in business administration and economics. Later, a variety of other programs were added. Anáhuac University has three sources of official validity for its programs of study. Some programs are recognized by the SEP; others are incorporated by UNAM; and one program is incorporated into the Universidad del Estado de México (University of the State of Mexico). Some programs offered by the university may not yet have been recognized or incorporated.

The latest information available for Anáhuac University indicates that the following *licenciatura* programs are incorporated into UNAM: *actuaría* (actuarial science), *administración de empresas* (business administration), *arquitectura* (architecture), *contaduría pública* (public accounting), *derecho* (law), *economía* (economics), *ingeniería civil* (civil engineering), *ingeniería mecánica* (mechanical engineering) and *psicología* (psychology). Programs in *ingeniería industrial* (industrial engineering) and *ingeniería de sistemas eléctricos y electrónicos* (engineering of electrical and electronic systems) are reported to be incorporated by UNAM; however, these programs are not among UNAM's own list of incorporated programs.

Six *licenciatura* programs at Anáhuac are reported to be recognized by the SEP: *administración de empresas turísticas* (administration of touristic businesses), *ciencias de la comunicación social* (social communication sciences), *ciencias de la educación* (science of education), *diseño gráfico* (graphic design), *diseño industrial* (industrial design), and *informática* (computer science). The program in medicine is incorporated by the University of the State of Mexico.

Admission to Anáhuac requires completion of an upper secondary program considered preparatory for higher education with a minimum average of 8 and an entrance exam. The institution operates on a semester system; most programs of study are 8 to 10 semesters in duration, although medicine is 12 semesters. A thesis, a professional exam, and a period of social service are required for graduation.

The following descriptive grading system is used: MB/*muy bien* (very good) = 9-10; B/*bien* (good) = 7.6-8.9; S/*suficiente* (satisfactory) = 6.0-7.5; NA/*no acreditada* (not passed) = below 6.[41]

Universidad Autónoma de Guadalajara/UAG
(Autonomous University of Guadalajara)

UAG, founded in 1935, is the oldest private university in Mexico. For the most part, its programs are incorporated into UNAM. According to UNAM's latest list of incorporated programs, there are a few UAG programs which have not yet been incorporated. One of these, a *licenciatura* program in *informática* (computer science), is not offered at UNAM. The incorporated programs are similar to or identical to programs offered at UNAM.

UAG offers programs of study at the lower secondary, upper secondary, undergraduate, and graduate levels. Special attention is given to programs in the field of medicine. Enrollment at the undergraduate level was 16,632 students in 1979-80. Of the student body at all levels, 81% is Mexican; 5.14% come from other Latin American countries; the rest come from other countries, many of them from the United States.

Admission to the undergraduate level at UAG requires completion of an upper secondary program considered preparatory for higher education. The process of modernization has resulted in a reorganization of basic courses in related fields into academic departments which are in turn grouped into *institutos* (institutes). Each institute is composed of several different *centros* (centers), *escuelas* (schools) and *facultades* (faculties). In 1972, three *áreas académicas* (academic areas) were created as administrative-teaching structures with authority over the institutes to promote better coordination among the schools and more efficient use of resources. They are as follows: Area of Health Sciences; Area of Science, Technology, and Secondary Education; and Area of Humanities and Social Sciences.

The academic year, which begins in August and ends in June, is divided into two semesters. Like UNAM, many of the programs use a credit system based on the ANUIES guidelines (2 credits per semester hour of academic or theoretical coursework; 1 credit per semester hour of practical or lab coursework).

Most *licenciatura* programs are eight to ten semesters in length and include 300 to 450 credits. There are some exceptions. The program leading to the degree *médico cirujano* (physician), which includes 437 credits, is a 6-year program. The first three semesters are devoted to general science education; the next five, to theoretical and practical clinical training. The fifth year consists of an internship, and the sixth, social service. The *licenciatura* program in *pedagogía* (pedagogy), with optional specializations leading to the degrees *profesor de educación media, ciencias sociales* (secondary education teacher, social sciences) or *asesor para el aprendizaje* (teaching advisor), is an 8-semester program which, like the UNAM program, includes only 192 credits.

Some of the schools at UAG offer programs which share a common core of courses. For example, the Escuela de Psicología (School of Psychology) offers an 8-semester *licenciatura* program in psychology with options in social psychology, psychology of work, educational psychology, and clinical psychology. The first six semesters are common to all the options.

While UAG does not offer any *salidas laterales* (lateral exits) from its undergraduate programs, it does offer a few *carreras cortas* (short programs). (For more information on short programs, see Undergraduate Programs of Study, this chapter.) These programs generally consist of selected courses from an entire *licenciatura* program, not only those in the first few semesters of a program. For the most part, the short programs, all of which are described below, are not incorporated into UNAM.

41. Osborn, *Institutional Report on Anáhuac University*.

The UAG's Escuela de Artes Plásticas (School of Plastic Arts) offers a 6-semester, 224-credit program leading to the intermediate degree, *diplomado*, in *diseño gráfico* (graphic design). The first two semesters of the *diplomado* program are the same as those of the 8-semester, 342-credit *licenciatura* program in graphic design. The remaining four semesters are made up of selected courses from the *licenciatura* program. On the other hand, the school's 5-semester *diplomado* program in artisanry design does not have a corresponding *licenciatura* program.

The Facultad de Administración, Contaduría, Economía, y Turismo (Faculty of Administration, Accounting, Economics, and Tourism) offers both a *licenciatura* and a *diplomado* program in *administración de empresas especialización turismo* (business administration specializing in tourism). The first two semesters of the 6-semester *diplomado* program and the 9-semester *licenciatura* program are the same; the rest of the *diplomado* program consists of courses selected from the *licenciatura* program.

Finally, the Escuela de Lingüística (School of Linguistics) offers a 6-semester program leading to the *diplomado* in *enseñanza de idiomas* (language teaching) which includes 122 credits. There is no corresponding *licenciatura* program.

All of the *licenciatura* programs except medicine require a thesis, professional exam, and period of social service for graduation. The medical program requires an *informe* (report) on the year of social service as well as a professional examination.

A descriptive grading system is used, which is equivalent to the 100-point scale as follows: MB/*muy bien* (very good) = 90-100; B/*bien* (good) = 77-89; S/*suficiente* (satisfactory) = 60-76; NA/*no acreditada* (not passed) = below 60.

Universidad de las Américas, A.C. (University of the Americas)[42]

Founded in 1940 as Mexico City College, the university conferred its first undergraduate degrees in 1945. The graduate school was founded in 1947. In 1963, its name was changed to the University of the Americas, and in 1970 the institution was moved from Mexico City to Cholula, Puebla. Its programs of study are recognized by the state of Puebla. A member of the Association of Texas Colleges and the Southern Association of Colleges and Schools, in 1977-78, 18% of its student body was composed of foreign students (16% from the United States).

Admission to the undergraduate level requires completion of a Mexican upper secondary program considered preparatory for higher education or graduation from a U.S. high school program. In the spring of 1977, the institution changed from a quarter system to a semester system. Now, the fall semester begins in late August and ends in mid-December; the spring semester begins in early February and ends in early June. There is also a summer session which begins in early July and ends in late August.

The University of the Americas is divided into the School of Social Sciences and Humanities, the School of Economics and Administrative Sciences, the Institute of Technology, the Division of Graduate Studies, and the Center of University Studies. Undergraduate programs are offered in accounting, anthropology, business administration, chemical engineering, computer systems, economics, electronic engr. and communications, food engr., graphic arts and design, industrial engr., intercultural education, international relations, Latin American studies, mechanical engr., and psychology. Undergraduate programs lead either to the Mexican *licenciatura* (licentiate) or to the U.S. bachelor's degree.

All of the undergraduate programs, which are comprised of 300 to 320 credits,

42. Deborah Triol Seekeley. *Institutional Report on the University of the Americas* (N.Y.: Institute of International Education, August 1977).

include the following general courses: two science courses, one mathematics course, two history and social science courses, two humanities courses, one course in the native language, and one history course (U.S. history for Mexican students and Mexican history for non-Mexican students). All students are required to pass a foreign language proficiency test or to take four courses in a second language. The *licenciatura* program also requires the completion of a period of social service.

The Center of University Studies (actually an extension of the university in Mexico City) still operates on the quarter system. It offers undergraduate, graduate, and continuing education programs.

Beginning in fall 1977, the university changed from a U.S. letter grading system to a Mexican grading system based on a scale of 1 to 10. The institution has established the following equivalency between the two scales: 9.8-10 = A+; 9.3-9.7 = A; 8.5-9.2 = B; 8.1-8.4 = C+; 7.6-8.0 = C; 7.5 = C−; 0-7.4 = F.

Universidad La Salle, A.C. (La Salle University)

La Salle University began as an upper secondary institution in 1931. In 1962, the university was founded with four schools—Architecture, Business and Administration, Law, and Engineering. Since then, other schools—and graduate programs—have been added. Most of its programs of study are incorporated into UNAM; thus, most are similar to, if not identical to, UNAM programs. Some are recognized by the SEP.

The university is still organized into schools: Arquitectura (Architecture), Contaduría y Administración (Accounting and Administration), Derecho (Law), Filosofía (Philosophy), Ingeniería (Engineering), Medicina (Medicine), and Química (Chemistry). Although each school has its own distinct characteristics, they all employ a system of semesters which are approximately 16 weeks in length.

Admission to an undergraduate program requires completion of an upper secondary program considered preparatory for higher education (see Chapter III), and an entrance exam. An average of 8/10 from the upper secondary program is required for entry to the undergraduate programs in Architecture, Accounting and Administration, and Law. An average of 7/10 is required for Chemistry, Engineering, and Philosophy. Students graduating from the Escuela Preparatoria (University Preparatory School) of La Salle University who meet certain personal and scholastic standards are afforded automatic access to all undergraduate programs except Medicine. Students graduating from an upper secondary teacher training program or from a vocational upper secondary program considered preparatory for higher education are required to take three prerequisite courses. The specific courses to be taken depend on the undergraduate program to be studied. All applicants to the School of Medicine are required to take an orientation course in the health sciences, undergo a psychological evaluation and personal interview, and pass health, general knowledge, and language exams.

The *licenciatura* programs at La Salle vary from 8 to 10 semesters in duration and include from 37 to 82 courses. Law is the shortest program in terms of courses. When this curriculum was modified in 1978, it was shortened from 10 to 9 semesters while the total number of courses was increased from 32 to 37. The 10-semester program in Architecture includes 82 semester-long courses. The shortest program in terms of semesters is the *licenciatura* program in Philosophy. This 8-semester program which includes 64 courses is essentially the same as that offered by UNAM/CU with the addition of a few courses. (See the description of UNAM earlier in this chapter.)

Some of the schools offer programs which share a common core of courses. For example, the School of Accounting and Administration offers two 9-semester *licenciatura* programs in accounting and administration which share a core of courses the first two semesters. The School of Engineering offers a program leading to the de-

gree of *ingeniero civil* (civil engineer) with specializations in *construcción* (construction) or *estructuras* (structures) which share a core of courses for the first 8 semesters of the 10-semester program.

A few of the programs employ a credit system which corresponds to that suggested by the ANUIES guidelines on the use of credit: 2 credits per semester hour of academic or theoretical coursework; 1 credit for each semester hour of lab or practical coursework.

For graduation, all of the programs at La Salle require a thesis, a professional exam, and a period of social service. Many of the programs include a thesis seminar during the last semester. Only the medical program requires an *informe* (report) on the period of social service rather than a thesis.

A descriptive grading system is used which corresponds to the numerical system as follows: MB/*muy bien* (very good) = 10; B/*bien* (good) = 8; S/*suficiente* (satisfactory) = 6; NA/*no acreditada* (not passed) = no numerical equivalent assigned.

In addition to the *exámenes ordinarios* (ordinary final exams), students may present as many as two *exámenes extraordinarios* (extraordinary exams) for exams they have missed or failed.

Private Institutions Whose Programs Lack Official Validity

There are innumerable private tertiary institutions in Mexico whose programs of study do not have official validity. Their reasons for not obtaining or perhaps not even seeking validity vary. Certain religious institutions may be unable to obtain validity because their programs of study violate constitutional restrictions on religious content of educational programs. Other institutions may not obtain validity because their programs are too different from those offered at established institutions.

There are institutions which, for various reasons, simply do not need validity for their programs of study. Possibly the institution offers only those programs that traditionally do not require their graduates to register with the SEP and receive a *cédula* (professional credential). (See Registration of Graduates, this chapter.) Often the institutions offer only graduate programs, and the students served include professionals who already are licensed in their respective fields and do not need to register their advanced degrees.

Clearly, however, there are institutions which have been unable to obtain validity for their programs of study because of quality factors. Their programs may simply not conform to the requirements for the acquisition of validity. Such institutions may serve primarily students from the United States and Canada and may not even offer the Mexican *licenciatura*. (See Chapter VI, Special Considerations.)

All of the institutions in category "6" in Appendix C either do not have official validity for their programs, or the source of their validity was unknown at the time of publication of this volume. Many institutions whose programs do not have validity are simply not listed because they are not regarded as part of the official educational system of Mexico. In general, less is known about these institutions than about those in other categories. While it is impossible to generalize about the quality of their programs, care is advised in evaluating records from these institutions, particularly those that exhibit the characteristics described in Chapter VI.

Chapter Five

Graduate Education

Overview

Graduate education is currently offered by a relatively small number of Mexican institutions of higher education, although that number is rapidly increasing. From 1959 to 1969, the number grew from 5 to 13; ten years later, there were 75 such institutions. Still, slightly less than one-third of all the institutions of higher education in Mexico offer education at the graduate level. Of these, only 15 offer programs at the *doctorado* (doctorate) level, the highest level of study in Mexico.[1]

The number of students enrolled in graduate programs is also growing. From 6,345 students in 1970-71, the number had increased to 23,585 in 1976-77. The concentration of students in the large urban areas, typical of the undergraduate level, is even more pronounced at the graduate level. In 1976-77, 77.4% of the graduate students in Mexico were enrolled in institutions in the Distrito Federal/D.F. (Federal District). Ninety-five percent of the students were enrolled in the three most populous states in Mexico: the Federal District, Jalisco, and Nuevo León.[2]

Institutional Categories and Official Validity as They Pertain to Graduate Education

In each of the six categories of Mexican institutions (three public categories and three private), which were described in the introductory section of Chapter IV, there are some institutions which offer graduate study. In the public federal and private free or independent categories, there are institutions which offer graduate education exclusively. (Graduate programs in institutions of each category are described in detail later in this chapter.)

One of the fundamental reasons for the existence of the system of official validity for educational programs relates to the registration of graduates with the Secretaría de Educación Pública/SEP (Ministry of Education). Only graduates of programs with official validity can register with the SEP and receive a *cédula* (professional credential) necessary to practice certain professions. Traditionally, the need for a professional credential has been

1. Asociación Nacional de Universidades e Institutos de Enseñanza Superior, *Los Estudios de Posgrado en México, 1978-79*, (México, D.F.: Imprenta Ajusco, 1979).
2. *La Planeación de la Educación Superior en México*, pp. 34-35.

limited, for the most part, to the undergraduate level and to certain fields of study such as engineering or medicine. Although the right to register with the SEP has recently been extended to any graduate of a tertiary program with official validity either at the undergraduate or graduate level, it is still more necessary to have a professional credential in an undergraduate field which has traditionally required one than to have a professional credential representing a graduate program of study. (See Chapter IV for a more complete discussion of official validity and the registration of graduates.)

The distinction between programs and levels of study which traditionally require a professional credential and those which do not affects Mexican private institutions in particular. The programs of study offered by public institutions have inherent validity and thus their graduates have full right to professional credentials. Private institutions which have not been granted free or independent status may seek validity for their programs through incorporation or recognition or they may decide not to seek validity for those programs for which validity is less important. Thus, an institution with several undergraduate programs of study with official validity may choose not to seek validity for some or all of its graduate programs. Institutions which offer only graduate study may simply not bother to seek validity for their programs.

Within certain restrictions placed on private education by the 1917 Constitution and by the 1973 Federal Education Law, private institutions are free to operate and to offer any kind of program of study. To offer programs with official validity is a choice, not an obligation. Although official validity is probably less significant for graduate education than for undergraduate or upper secondary education, most private institutions do seek official validity for their graduate programs. While a program's lack of official validity does not necessarily indicate a program of lesser quality, it does indicate that the program has not been subject to review or approval by either the SEP, a public institution, or a state government. (See Chapter IV for the ways in which a program may be granted official validity.)

Institutional Organization and Planning

The recommendations of the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education) which have tended to establish certain standards and organizational patterns at the undergraduate level have so far had less impact at the graduate level. In fact, only one ANUIES recommendation—that opportunities for graduate study be extended to more states—specifically applies to graduate education.[3] The federal government has begun responding to the need for more opportunities for graduate study in the states by establishing centers of graduate study in some of the Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes). (The system of technical institutes is described later in this chapter.) How-

3. "Acuerdos y Declaraciones," p. 57.

ever, the expansion of opportunities for graduate study outside the large urban areas is still hindered by the lack of qualified professors in those areas.[4]

Even though the ANUIES recommendations concerning internal institutional organization have had some effect, there is still much more diversity at the graduate level than at the undergraduate level. An institution's graduate programs usually are offered in the same divisions—faculties, schools, or units—that offer its undergraduate programs (see Chapter IV), although in some cases the graduate programs are grouped together in a single *escuela de graduados* (graduate school). As at the undergraduate level, courses may be year-long, or offered on a semester basis. The other divisions of the academic year, the *trimestre*, *cuatrimestre*, and *tetramestre*, seem to be even more prevalent at the graduate level than at the undergraduate level. (See Chapter IV, pp. 74-75, for a description of the various divisions of the academic year.)

The use of a system of *créditos* (credits) or *unidades* (units of credit) is quite common at the graduate level; however, its exact application is different at almost every institution. The use of credits sometimes even varies among divisions of an institution. Some institutions, such as the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico), do follow the ANUIES guidelines for the use of the credit system in which 2 credits are assigned to every semester hour of academic or theoretical coursework and 1 credit is assigned to every semester hour of laboratory or practical coursework. Other institutions, such as the federal Centros Regionales de Estudios de Graduados e Investigación Tecnológica/CREGIT (Regional Centers of Graduate Study and Technological Research), use a system of credits that is similar to that used in the United States in which every semester hour is worth 1 credit. At some institutions, each course is assigned 1 credit. Still other institutions simply assign each course a credit value in no apparent pattern.

Programs of Study at the Graduate Level

Programs of study at the graduate level usually are referred to as *estudios de posgrado* (postgraduate studies). Four kinds of graduate programs are offered in Mexico. Since most institutions have developed graduate programs fairly recently, individual programs of study may deviate considerably from the generalizations made in the following paragraphs. In many cases, there is not a set study plan. Instead, programs are developed on an individual basis, in accordance with the academic background and interests of each student. Some programs of individual institutions are described later in this chapter. Although it has not been possible to describe all of the programs offered by each institution, an effort has been made to include both the programs whose characteristics seem to contradict the generalizations made here, as well as those which illustrate these generalizations.

4. *La Planeación de la Educación Superior en México*, p. 35.

CONTINUING EDUCATION COURSES

Cursos de actualización (continuing education courses) are offered at almost every educational level. However, they are included here as a separate category because continuing education courses offered at the graduate level—i.e., which require a *licenciatura* for entry—sometimes yield transfer credit toward the requirements of a program of *especialización* (specialization). A program may be referred to as a continuing education program because it includes only a few graduate-level courses.

PROGRAMS OF *ESPECIALIZACION* (SPECIALIZATION)

ANUIES defines the *especialización* as "a program which allows students to acquire deeper knowledge of a relatively limited area of a discipline and which educates them to apply particular methods and techniques to the solution of specific problems of the discipline."[5] In short, the *especialización* tends to be a program which concentrates on a more practical or applied branch of a discipline. In keeping with their practical orientation, programs of *especialización* usually do not require any research. They are usually associated with dentistry and medicine; however, they are offered in many other fields of study, including administration, education, engineering, and law.

Programs of *especialización* generally are shorter than *maestría* (master's) programs, both in terms of years of study and in terms of credits. The programs are often one year or less in length and include from one-half to two-thirds the number of credits of *maestría* programs. In some cases, some of the same courses apply to both the *especialización* and the *maestría* programs. There are exceptions to these generalizations, particularly among specializations offered in the dental and medical fields. Programs of *especialización* in the dental and medical fields, often much longer than *maestría* programs offered in the same fields of study, are sometimes up to four years in duration. Up to one-half of these *especialización* programs may be devoted to a period of residency in a hospital or clinic; this is not always the case, since some programs do appear to consist entirely of coursework.

THE *MAESTRIA* (MASTER'S) PROGRAM

According to ANUIES, the *maestría* program educates students in a specific field of study to enable them to carry out research or to practice their professions at a high level of specialization.[6] The principal difference between the *especialización* and the *maestría* (master's) is the emphasis on research. *Maestría* programs are often one to two years in length. Research in support of a thesis is sometimes integrated throughout the program. In some cases, an entire semester, even an entire year, may be spent researching the thesis.

5. ANUIES, *Los Estudios de Posgrado en México, 1978-79.*

6. *Ibid.*

Only recently has the *maestría* degree begun to be offered at the graduate level in *escuelas normales superiores* (higher normal—teacher training—schools). The 1973 Federal Education Law has been interpreted to mean that the first undergraduate degree offered in higher normal schools should be the *licenciatura*. Prior to that time, the first undergraduate degree offered in higher normal schools was the *profesor* or *maestro* (teacher); the first graduate degree was the *doctorado* (doctorate). Now that the higher normal schools offer a *licenciatura* as the first undergraduate degree, some higher normal schools have replaced their *doctorado* programs with graduate-level *maestría* programs, and some may even offer *doctorado* programs which require a *maestría* for entry. (For more information, see Chapter VI.)

THE *DOCTORADO* (DOCTORATE) PROGRAM

According to ANUIES, the *doctorado* program prepares students "to carry out basic or applied original research."[7] Of all the graduate programs, *doctorado* programs are the least clearly defined. Programs of study are quite flexible, often developed on an individual basis in accordance with the student's needs and previous educational background. While the exact length of programs varies widely, they usually include two years of coursework and a period of research leading to the preparation of a thesis. (Note: In the United States this is commonly referred to as a dissertation. Since the term *tesis* (thesis) is used at both the *maestría* and *doctorado* levels in Mexico, the literal translation, thesis, is used in the following sections.)

Graduate Degrees and Degree Requirements

In Mexico, the designation for the degree and the designation for the holder of the degree are practically interchangeable. At the graduate level, the degrees offered are the *especialización* (specialization), *maestría* (master's) and *doctorado* (doctorate). The holder of one of these degrees is referred to as *especialista*, *maestro*, or *doctor*, respectively. While a degree generally is known as a *título* (title or degree), a graduate-level degree, particularly a *maestría* or *doctorado*, is also referred to as a *grado* (degree). The degree granted upon completion of the *especialización* is usually referred to as a *diploma*. No degree is awarded for the completion of *cursos de actualización* (continuing education program). Instead, a *constancia de estudios* (temporary transcript) is issued showing the courses completed. (See Chapter VI.)

The completion of a *curso de actualización* simply requires completion of the prescribed study plan. Similarly, the *especialización* generally requires nothing more than the completion of the required courses and/or residency; however, in some cases, a final examination based on the content of the program or a short *tesina* (report) may also be required.

To earn the *grado de maestría* (master's degree), a thesis, based on research carried out during the program, and an *examen de grado*, which is basically the oral and/or written defense of the thesis, are required in addition to

7. *Ibid.*

completion of the study plan. The *grado de doctorado* (doctoral degree) also requires a thesis; however, in this case, the thesis must be based on original research. In addition to the *examen de grado*, the defense of the thesis, another examination may also be required. This examination, variously referred to as an *examen de candidatura* (candidacy examination), an *examen final* (final examination), or an *examen global* ("global" or comprehensive examination), tests students' knowledge of their field of study prior to the presentation of the thesis.

Access to Graduate Programs

The basic requirement for admission to any of the graduate programs of study is the *licenciatura* in an appropriate field of study. In most cases an entrance examination is also required. A few institutions also require a personal interview. Admission to a *doctorado* program usually also requires completion of a *maestría* degree; however, in some cases, students are admitted directly to the *doctorado* program following the *licenciatura* degree, presumably with a number of prerequisite courses. A few *maestría* programs, especially in the field of medicine or dentistry, require both the *especialización* and the *licenciatura* for entry. (See UNAM, this chapter.)

For admission to a graduate program, all *licenciatura* programs, regardless of their length, are equivalent. (See Chapter IV.) Graduates of shorter *licenciatura* programs may be required to take prerequisite courses prior to beginning the graduate program. Prerequisite courses may also be required of students whose undergraduate degree is in a different field than the one they wish to study at the graduate level. Preference generally is shown to applicants who completed their undergraduate programs at the institution offering the graduate programs they wish to enter.

Grading

With a few exceptions, the same grading scales in use at the undergraduate level are also used at the graduate level. (See Grading in Chapter IV.) However, in most cases, the minimum grade required to pass a course or the minimum passing average to graduate is higher than at the undergraduate level, often 8 or the grade B/*bien* (good). If the grading scale used at a given institution has not been included in Table 12 in Chapter IV, it is described in the section on that institution. *Exámenes extraordinarios* (extraordinary examinations) are less common than at the undergraduate level. Students generally are allowed only one opportunity to pass a course.

Graduate Education in the Various Categories of Institutions

In the following sections, the graduate programs of at least a few institutions of higher education in each of the six categories are discussed. The decision to include certain institutions was based primarily on the availability of

information about their graduate programs; however, the type of institutions included in each category also influenced this decision. In categories which include only one or two basic types of institutions, such as universities or higher teacher training institutions, fewer institutions are described. In the category of federal institutions, which includes a wide variety of specialized institutions, an effort was made to include as many institutions as possible. Refer to Appendix C for a list of the institutions of higher education in Mexico.

Graduate Education in the Public Autonomous Institutions

Twenty of the public autonomous institutions in Mexico offer programs of study at the graduate level as well as at the undergraduate level. (See Chapter IV, Public Autonomous Institutions.) In the following sections the graduate programs of two public autonomous institutions of higher education are discussed.

Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico)

All UNAM faculties, as well as a few of the other divisions, offer graduate programs of study. (See Chapter IV for a description of the various divisions of UNAM.) Other than the faculties, the Colegio de Ciencias y Humanidades/CCH ("College" of Sciences and Humanities), the Escuela Nacional de Arquitectura (National School of Architecture), the Escuela Nacional de Artes Plásticas (National School of Plastic Arts), the Escuela Nacional de Enfermería y Obstetricia (National School of Nursing and Obstetrics), and the Escuela Nacional de Estudios Profesionales-Iztacala/ENEP (National School of Professional Studies-Iztacala) offer programs of study at the graduate level.

UNAM offers programs of *actualización* (continuing education), as well as programs of study leading to the *especialización*, *maestría*, and *doctorado* degrees. In 1979-80, the enrollment in UNAM's *especialización*, *maestría*, and *doctorado* programs was 4,394, 4,370, and 481, respectively. As at the undergraduate level, programs are organized in terms of semesters. A system of credits is used, in accordance with the ANUIES guidelines on the use of the credit system (2 credits for each semester hour of academic or theoretical coursework, 1 credit for each semester hour of practical or laboratory coursework).

Admission to the UNAM *especialización*, *maestría*, and *doctorado* programs generally requires completion of a *licenciatura* program, often in specific related fields of study. Students with a *licenciatura* from UNAM in a field of study different from those specified for admission may be required to pass an entrance examination and take prerequisite courses. An entrance exam and prerequisite courses may also be required of students with *licenciaturas* from other institutions. Students at UNAM who have not yet completed all the requirements for a *licenciatura*, i.e., *egresados pasantes*, may be admitted to graduate study on the condition that the *licenciatura* be completed within two years.

In addition to the *licenciatura*, the *maestría* (or in a few cases the *especialización*) is required for entry to the *doctorado* program. Even if the *maestría* is not a stated admission requirement, courses which correspond to the *maestría* are completed as part of the *doctorado* program. Some *maestría* programs require the *especialización* in addition to the *licenciatura*. For example, the program of study leading to the *maestría*

in *odontología* (dentistry) offered in the Facultad de Odontología (Faculty of Dentistry) requires for entry the *especialización in docencia de la odontología* (dentistry education).

In one UNAM division, completion of an upper secondary program instead of the *licenciatura* may be accepted as the entrance requirement to the *especialización* program. The National School of Nursing and Obstetrics, which offers graduate programs leading to the *especialización* in *administración de servicios de enfermería* (administration of nursing services), *educación en enfermería para profesores* (education in nursing for professors), *enfermería cardiológica* (cardiology nursing), *enfermería pediátrica* (pediatric nursing), *enfermería psiquiátrica* (psychiatric nursing) and *enfermería quirúrgica* (surgical nursing), accepts either completion of an upper secondary program in nursing or a *licenciatura* in nursing for entry to one of its programs of *especialización*. Only students who have also completed a *licenciatura* program receive the *diploma de especialización* upon completion. Others receive a *constancia* (temporary transcript or certificate). If the *especialización* is completed following an upper secondary program, it is regarded as an undergraduate *carrera corta* (short program). (See Chapter IV.)

Admission requirements and programs of study for the *cursos de actualización* (continuing education programs) are developed by individual divisions of UNAM. When the *actualización* courses are offered at the graduate level (that is, when the *licenciatura* is required for admission), some of the courses may be the same as those offered in an *especialización* program and may transfer into an *especialización* program. In any case, a continuing education program leads to a *constancia de actualización* (continuing education certificate).

The programs of study leading to the *especialización*, *maestría*, and *doctorado* degrees vary widely from division to division and even within divisions. The *especialización* includes a minimum of 40 credits and is, in many divisions, a 2-semester program. The *maestría* program, usually 4 semesters in length, includes a minimum of 70 ANUIES credits. The *doctorado* program, often a 4-semester program, usually includes 150 ANUIES credits. Within a division, similar courses may count toward any of the three degrees. However, the three degrees usually are not offered in precisely the same aspect of a field of study. The *especialización* normally concentrates on a more specific or more applied aspect of a field of study than the *maestría* or *doctorado*. For example, while the National School of Architecture offers *especializaciones* in such fields of study as *prefabricación e industrialización de edificios* (prefabrication and industrialization of buildings) and *terminales de transporte* (transportation terminals), the *maestría* programs are in such areas as *diseño arquitectónico* (architectural design) and *investigación y docencia* (research and teaching).

Programs of study, however, vary greatly around these generalizations. Programs, especially at the *doctorado* level, are often flexible, developed in response to individual needs. More credits do not always indicate a longer program in terms of semesters. For example, in the Facultad de Filosofía y Letras (Faculty of Philosophy and Letters), *maestría* and *doctorado* programs are offered in various fields of study including *antropología* (anthropology), *estudios latinoamericanos* (Latinamerican studies), *filosofía* (philosophy), *geografía* (geography), *historia* (history), *letras* (letters), and *pedagogía* (pedagogy). The 2- to 3-semester *maestría* programs comprise from 67 to 75 ANUIES credits; however, the 2-semester programs include more credits than the three-semester programs.

At UNAM the programs of study leading to the *especialización*, *maestría*, and *doctorado* degrees offered in the Facultad de Estudios Superiores Cuautitlán (Faculty of Higher Studies Cuautitlán) illustrate well the differences among the three degrees.

The *doctorado* program in microbiology is generally a 4-semester program which includes 110 credits. However, applicants with a *licenciatura* must complete the 77

ANUIES course credits and 34 research credits of the *maestría* in veterinary microbiology before beginning the doctoral program. Students who have completed the *especialización* in microbiology are granted 80 ANUIES course credits, and before beginning the *doctorado* they must complete the 34 research credits of the *maestría*. Students who have completed the *maestría* in *microbiología veterinaria* or a related *maestría* will be granted 80 course credits and 34 research credits, and may enter the *doctorado* program directly. (See Table 30.)

In other faculties at UNAM, however, the *especialización* is often a longer program of study than *maestría* and *doctorado* programs. This is especially true in disciplines with more practical or clinical areas of study, such as dentistry, medicine, psychology, and veterinary medicine. When the *especialización* is a longer program of study than the *maestría* or *doctorado*, it often includes a large percentage of laboratory or clinical work.

For example, the Facultad de Medicina (Faculty of Medicine) offers programs of study leading to the *especialización*, *maestría*, and *doctorado* degrees. Programs leading to the *especialización* are offered in various medical fields. (See Table 29 for a list of fields of study.)

Admission to one of the programs of *especialización* requires an undergraduate degree in medicine as well as the *introducción a la especialización médica* (introduction to the medical specialization). This one-year introduction is primarily a postgraduate residency which includes instruction in internal medicine, general surgery, gynecology, obstetrics, and pediatrics. The course includes 72 ANUIES credits, 50 of which are devoted to clinical practice. The programs of *especialización* are two to eight semesters in length and include from 100 to 381 credits. An average of 50% of each program is devoted to clinical or laboratory work.

The Faculty of Medicine's *maestría* and *doctorado* programs, on the other hand, are offered in *ciencias biomédicas* (biomedical sciences), *ciencias médicas* (medical sciences), *farmacología* (pharmacology), *fisiología* (physiology), and *psiquiatría* (psychiatry). All but the program in biomedical sciences require an undergraduate degree in medicine for admission, as well as one of the *especialización* programs; the program in biomedical sciences requires a *licenciatura* in a scientific field. The *doctorado* program requires a *maestría* for admission.

The *maestría* programs in medicine include from 109 to 195 ANUIES credits. In addition to laboratory work, all *maestría* programs include advanced seminars, elective courses in an area of concentration, research leading to a thesis, and required teaching hours. The *doctorado* programs range from 50 to 214 credits. The longest *doctorado* program in terms of credits is in biomedical sciences, which also happens to be the shortest at the *maestría* level. The *doctorado* program includes essentially the same activities as the *maestría*, except that the research is more extensive.

The main differences, therefore, between the *especialización*, *maestría*, and *doctorado* programs do not lie in the length of the program, since these vary greatly, but rather in the degree of emphasis on research. Completion of the program of study and a final examination, which covers subjects taken in the program, are the basic requirements to earn the *diploma de especialización*. In some cases, a *tesina* (a short report) and its defense in an oral exam may be substituted for the final exam. No course credit is allotted for the completion of the short report.

The *grado de maestría* (master's degree), on the other hand, usually requires research leading to a thesis and its defense in an *examen de grado* (degree examination). Up to 25% of the credits which comprise a program of study may be devoted to research and the preparation of the thesis. In some cases a general knowledge exam may be substituted for the thesis and its defense. Demonstration of knowledge of a foreign language is also required to earn the *maestría*.

To earn the *grado de doctorado* (doctoral degree), a high quality thesis representing

Table 29

Medical Programs Leading to the *Especialización*, UNAM and UG

1. Programs Offered at UNAM/Universidad Nacional Autónoma de México:

anatomía patológica (pathological anatomy)
angiología (angiology)
biología de la reproducción humana (biology of human reproduction)
cirugía de mano (hand surgery)
cirugía pediátrica (pediatric surgery)
endocrinología y nutriología (endocrinology & nutrition)
genética médica (medical genetics)
hematología (hematology)
infectología (infectology)
inmunología clínica y alergias (clinical immunology & allergies)
laboratorio clínico (clinical laboratory)
medicina del enfermo en estado crítico (medicine of the critically ill)
medicina legal (legal medicine)
medicina nuclear (nuclear medicine)
medicina de rehabilitación (medicine of rehabilitation)
medicina del trabajo (medicine of work)
microbiología (microbiology)
nefrología (nephrology)
neumología (pneumology)
neurología (neurology)
parasitología médica (medical parasitology)
psicoanálisis (psychoanalysis)
residencia de medicina familiar (family medical residency)
reumatología (rheumatology)

2. Programs Offered at UNAM and UG/Universidad de Guadalajara:

anestesiología (anesthesiology)
cardiología (cardiology)
cirugía general (general surgery)
cirugía plástica y reconstructiva (plastic & reconstructive surgery)
cirugía del tórax (thorax surgery)
dermatología (dermatology)
gastroenterología (gastroenterology)
ginecología y obstetricia (gynecology & obstetrics)
medicina interna (internal medicine)
neurocirugía (neurosurgery)
oftalmología (ophthalmology)
oncología (oncology)
otorrinolaringología (otorhinolaryngology)
pediatría médica (medical pediatrics)
proctología (proctology)
psiquiatría (psychiatry)
radiodiagnóstico (radiodiagnostics)
traumatología y ortopedia (traumatology & orthopedics)
urología (urology)

SOURCES: Asociación Nacional de Universidades e Institutos de Enseñanza Superior, *Los Estudios de Posgrado en México, 1978-79* (México, D.F.: Imprenta Ajusco, 1979), pp. 49-50; *Planes de Estudios UNAM 1980.*

original research and its defense in an *examen de grado* (degree examination) are required. Up to 40% of the credits which comprise a program of study may be devoted to research and the preparation of the thesis. Knowledge of a second foreign language may also be required.

Grading at the graduate level is the same as that at the undergraduate level except that in most cases the minimum passing grade required is higher at the graduate level. Students with an overall grade average below 8 (out of 10) may be required to pass a comprehensive examination before being allowed to defend the thesis. This exam is designed to determine whether the student has sufficient academic preparation to defend the thesis and graduate. Also, students are allowed to take final exams in their courses only once; no *exámenes extraordinarios* (extraordinary examinations) are allowed.

Table 30

Graduate Programs, Facultad de Estudios Superiores Cuautitlán (Faculty of Higher Studies Cuautitlán), UNAM*

Especialización en Microbiología (Specialization in Microbiology)

First Semester	Cr	Second Semester	Cr	Third Semester	Cr
Biostatistics	7	Bacteriology & Mycology	18	Epidemiology	8
Cellular Physiology	6	Bacteriology Seminar	1	Industrial Microbiology	15
Immunology	10	Veterinary Virology	16	Infectious Diseases	20
Immunology Seminar	1	Virology Seminar	1		
Microbic Biochemistry	8				

Minimum Credits Required: 83

Maestría en Microbiología Veterinaria (Master's in Veterinary Microbiology)

First Semester	Cr	Second Semester	Cr	Third Semester	Cr
Basic Immunology	9	Bacteriology Seminar	1	Industrial Microbiology	15
Biochem. or Microbic Biochemistry	8	Veterinary Bacteriology & Mycology	18	Infectious Diseases	20
Cellular Physiology	6	Veterinary Virology	16		
Immunology Seminar	1	Virology Seminar	1		
Statistics or Biostatistics	7				

Fourth Semester	Cr
Work on Thesis	34

Minimum Credits Required: 112

Doctorado en Microbiología (Doctorate in Microbiology)

First Semester	Cr	Second & Third Sem	Cr		Cr
Advanced Biostatistics	4	Advanced Virology Techniques	4	Lab of Extraction & Purification of Antigens	4
Advanced Diagnostic Bacteriology	6	Applied Genetics	6	Microbiology of Gastrointestinal System	6
Advanced Virology	4	Biotechnology	6	Microbiology of Genitourinary System	6
Immunobiology	4	Cellular Immunology	2	Microbiology of Respiratory System	6
		Electronic Microscope Lab	4	Radioisotope Laboratory	4
		Epidemiology	4	Selected Topics in Virology	4
		Immunology Laboratory	4	Veterinary Immunology	4
		Immunopathology	4		

Third & Fourth Sem	Cr
Research/Thesis	30

Minimum Credits Required: 110

*UNAM—Universidad Nacional Autónoma de México (National Autonomous University of Mexico)

SOURCE: *Organización Académica 1980-81 Facultad de Estudios Superiores Cuautitlán UNAM*, Secretaría de Rectoría, Dirección General de Orientación Vocacional.

Universidad Autónoma Metropolitana/UAM (Autonomous Metropolitan University)

Two of the *unidades* (units) of the UAM, Unidad Iztapalapa and Unidad Xochimilco, offer graduate programs of study, all of which lead to the *maestría* degree. These programs are found in three of the four academic *divisiones* (divisions) of UAM. (See Chapter IV for a description of the various units and divisions of UAM.) Both Unidad Iztapalapa and Unidad Xochimilco offer graduate programs in the Division of Biological and Health Sciences/DCBS and in the Division of Social Sciences and Humanities/DCSH. Unidad Iztapalapa also offers graduate programs of study in the Division of Basic Sciences and Engineering/DCBI.

As at the undergraduate level, the curriculums offered reflect UAM's mandate to educate students in fields of study judged to be of social benefit. Scientific fields, as well as nontraditional aspects of traditional fields, are emphasized. All are approached from an interdisciplinary point of view. In the DCBS, Unidad Iztapalapa offers *maestría* programs in *biología de la reproducción animal* (biology of animal reproduction), *biología experimental* (experimental biology), and *investigación en salud pública* (research in public health); Unidad Xochimilco offers *maestría* programs in *medicina social* (social medicine) and *rehabilitación* (rehabilitation). In the DCSH, Unidad Iztapalapa offers *maestría* programs in *filosofía de la ciencia* (philosophy of science) and *historia* (history); Unidad Xochimilco, in *administración del trabajo* (work administration) and *derecho económico* (economic law). Finally, in the DCBI, Unidad Iztapalapa offers *maestría* programs in *física* (physics), *ingeniería química* (chemical engineering), *matemática* (mathematics), and *química* (chemistry).

Admission to a *maestría* program at UAM generally requires a *licenciatura* in a field of study related to the graduate program of study. However, since the programs are often interdisciplinary in nature, individual *maestría* programs accept a variety of undergraduate fields of study. For example, the program in social medicine accepts graduates of *licenciatura* programs in either the health sciences or the social sciences. Most programs also require knowledge of the English language. Some programs accept students who have not completed all the requirements for the *licenciatura* on the condition that the undergraduate degree be completed prior to beginning the fourth *trimestre* of the *maestría* program.

UAM uses a system of 12-week *trimestres*. Although a credit system is used, its exact application varies widely, not only from unit to unit but among programs of study. For example, in the chemistry program, 3 *trimestre* hours (comparable to 3 quarter hours) of class per week per quarter equal 12 credits; in the philosophy of science program, credits are assigned in accordance with the ANUIES guidelines (2 credits for each semester hour of academic coursework, 1 credit for each semester hour of practical or lab work). In other programs, credits are assigned in no perceptible pattern.

Graduate programs of study at UAM are generally six to eight *trimestres* in duration and include approximately 200 credits. However, programs with fewer credits are not necessarily shorter. For example, the program in economic law (see Table 31), which includes 240 credits, is only six *trimestres* in length, while the program in work administration, which includes 169 credits, is eight *trimestres* long. Research leading to the thesis may be assigned no credits at all or as many as 120 credits; however, such research is commonly assigned 60 to 80 credits.

The courses which constitute a program of study at UAM are usually organized in terms of two *niveles* (levels) or *áreas* (areas). The first level includes more general courses which provide the background necessary for the courses to follow. Courses in the second level are more specialized. Many of the programs diversify in the second level into subspecializations or areas of concentration. For example, the following subspecializations are offered in the physics program: *física en polímeros* (polymers physics), *física estadística* (statistical physics), *física molecular* (molecular physics),

física química de fluidos (physical chemistry of fluids), and *gravitación y astrofísica* (gravitation and astrophysics).

As at the undergraduate level, the structure and philosophy of the programs of study differ greatly between Unidad Iztapalapa and Unidad Xochimilco. The curriculum at Unidad Iztapalapa is organized in terms of courses; at Unidad Xochimilco, the curriculum is organized in terms of modules, which are broader in scope than courses. One module typically encompasses an entire *trimestre* and includes a series of topics. (See Table 31 for comparison of programs of study offered at the two units.) All the programs require a thesis and its defense in an examination for graduation.

Table 31

Maestría Programs, Division of Social Sciences and Humanities, UAM

T = Theoretical P = Practical Cr = Credits

Unidad Iztapalapa				**Unidad Xochimilco**			
Maestría en Historia (History)				*Maestría en Derecho Económico* (Economic Law)			
Basic Level	T	P	Cr		T	P	Cr
First *Trimestre*				First *Trimestre*/First Module			
History & Historical Research of Mexico I	4	–	8	Economic Structures & Judicial Models in Latin America I	15	10	40
Methodology of History I	4	–	8	(Genesis of the Latin American state & models of development in Latin America)			
Topics in European Economic History	4	–	8				
Second *Trimestre*				Second *Trimestre*/ Second Module			
History & Historical Research of Mexico II	4	–	8	Economic Structures & Judicial Models in Latin America II	15	10	40
Methodology of History II	4	–	8	(State, law, legal & economic hegemony; fundamental concepts of economic law)			
Topics in European Economic History	4	–	8				
Level of Concentration							
Third *Trimestre*				Third *Trimestre*/Third Module			
Economic Historical Research	4	–	8	Economic-Judicial Structure of Mexico I	15	10	40
Seminar	2	4	8	(Evolution of economic-judicial system of Mexico; judicial basis of financial sector)			
Sociopolitical Problems of Latin America	4	–	8				

Fourth *Trimestre*				Fourth *Trimestre*/Fourth Module			
Seminar	2	4	8	Economic-Judicial Structure of Mexico II	15	10	40
Social Historical Research	4	–	8	(Mechanisms of concentration in Mexico)			
Fifth *Trimestre*				Fifth *Trimestre*/Fifth Module			
Seminar	4	16	24	Latin America in the International Judicial Order I	15	10	40
				(Architecture of international order; mechanics of international commerce)			
Sixth *Trimestre*				Sixth *Trimestre*/Sixth Module			
Seminar	4	16	24	Latin America in the International Judicial Order II	15	10	40
Thesis			50	(New international economic order; international economic law as contributor to solution of Latin American problems)			
Total			186				240

SOURCE: Curriculum from Universidad Autónoma Metropolitana. (mimeographed)

Graduate Education in the Public State Institutions

Three of the state universities and one of the state higher normal—teacher training—institutions offer programs of study at the graduate level. The three universities are the Universidad de Guadalajara/UG (University of Guadalajara), the Universidad de Guanajuato (University of Guanajuato), and the Universidad Veracruzana (Veracruz University). The higher teacher training institution which offers graduate study is the Escuela Normal Superior del Estado de Nuevo León/ENS-NL (Higher Normal School of Nuevo León). (See Chapter IV for a discussion of the public state institutions of higher education.) In the following sections, graduate education at the University of Guadalajara and the Higher Normal School of Nuevo León are discussed.

Universidad de Guadalajara/UG (University of Guadalajara)

UG offers courses of *actualización* (continuing education) as well as programs of study leading to the *especialización*, *maestría*, and *doctorado* degrees. Since medical study

is particularly emphasized at UG, many of its graduate programs are in the field of medicine. The UG graduate programs are offered in an *escuela de graduados* (graduate school), and as at the undergraduate level, a semester system is used. Some of the graduate programs are organized in terms of credits.

The *especialización* programs generally include both courses and practical training. Most of the *especialización* programs are offered in the field of medicine; however, a few are offered in dentistry and law. Admission to an *especialización* requires a *licenciatura* in a related field. Programs in medicine and dentistry require undergraduate degrees in medicine and dentistry, respectively. The *especializaciones* in medicine also require completion of a one-year program of *introducción a la especialidad médica* (introduction to the medical specialization) which primarily involves a *residencia rotatoria* (rotating residency). See Table 29 for fields of study. These programs, which range in length from two to four years and include from 1,000 to 4,500 total hours, involve hospital practice as well as academic courses.

Programs of *especialización* in dentistry are offered in *cirugía oral* (oral surgery), *endodoncia* (endodontics), *odontopediatría* (pediatric dentistry), and *paradoncia* (paradontics). These programs are all two years in duration, and approximately 70% of each program is devoted to clinical practice. Programs of *especialización* are offered in *administración tributaria* (tax administration), *derecho fiscal* (fiscal law), *derecho privado* (private law), and *negociación colectiva* (collective bargaining). The program in tax administration is three semesters in length; information on the duration of the others was unavailable. The *diploma de especialización* in any of these dental, law, or medical fields simply requires completion of the programs of study.

Although relatively few *maestría* programs are offered at UG, they are offered in a wider range of subjects than the *especialización*, including engineering, humanities, law and medicine. All of the *maestría* programs require a *licenciatura* in a related field of study for entry. Admission to the *maestría programs in ginecología* (gynecology) and *derecho privado* (private law) require an *especialización* in *gineco-obstetricia* (gynecology-obstetrics) and private law, respectively.

The *maestría* programs at UG range from three to six semesters in length. Some of them are organized in terms of credits. For example, the 4-semester program in *biología celular* (cellular biology) includes a total of 208 credits, distributed in the following manner: obligatory theoretical courses in cellular biology I and II, intermediate biochemistry, and five elective courses, each of which meets 3 hours each week and is assigned 12 credits. Four courses in basic scientific techniques are also required; each includes 1½ hours of theoretical study and 3 hours of practical study each week and is assigned 4 credits. A research seminar worth 16 credits is also required each semester. Laboratory work leading to the thesis is assigned 80 credits.

The *maestría* program in *derecho privado* (private law) is a five-semester program which includes the following courses: bankruptcy and suspension of payments, contracts, family and inheritance laws, goods and rights, loan institutions, loan operations, material law, procedural problems in private law, real obligations, corporations, and theory of the judicial act.

The *maestría* program in gynecology requires ten seminars in gynecology as well as slightly over 1,000 hours of teaching in the Faculty of Medicine and the Graduate School.

Graduation from any of the *maestría* programs requires a thesis and its defense in an oral examination.

Programs leading to the *doctorado* degree are offered at UG in *ciencias biomédicas* (biomedical sciences) and *ginecología* (gynecology). A *maestría* degree is required for admission. The programs of study, which last no less than two years, require a course in teaching techniques and a course in the theory of knowledge as well as other courses which relate to the field of study. Original scientific research is emphasized, and

graduation requires a thesis based on original research and its defense in an oral examination. Graduation also requires knowledge of two foreign languages.

At the graduate level in UG, grading in individual courses is based on at least two or three partial examinations, class participation, and laboratory performance. A minimum attendance of 80% is required, and the minimum passing grade is 80 out of 100.

Escuela Normal Superior del Estado de Nuevo León/ENS-NL (Higher Normal—Teacher Training—School of the State of Nuevo León)

In 1978, as a result of the 1973 Federal Education Law, the ENS-NL created its Escuela de Graduados (Graduate School) and instituted its first graduate programs. (See Chapter VI for a description of the development of teacher education.) The ENS-NL currently offers a graduate-level program leading to the *maestría en educación media* (master's in secondary education) in one of the following areas of specialization: *ciencias biológicas* (biological sciences), *ciencias sociales* (social sciences), *física y química* (physics and chemistry), *idiomas* (languages), *lengua y literatura españoles* (Spanish language and literature), *matemáticas* (mathematics), *pedagogía* (pedagogy), *psicología y orientación vocacional* (psychology and vocational orientation). It is hoped that by 1985, the ENS-NL will have a sufficient number of qualified professors to institute a Centro de Investigaciones Pedagógicas (Center of Pedagogical Research) which will offer a program of study leading to the *doctorado en educación media* (doctorate in secondary education).

Admission to the *maestría* program requires an undergraduate degree (*maestro, profesor, licenciatura*) from a higher normal school, at least two years' teaching experience at a level past primary school, and knowledge of a foreign language. Students who have not yet completed the undergraduate degree (i.e., *egresados pasantes*) may also be accepted on the condition they complete the undergraduate degree prior to receiving the *maestría*.

Table 32

Maestría en Educación Media (Secondary Education), Escuela Normal Superior del Estado de Nuevo León (Higher Normal School of the State of Nuevo León)

General Courses (Common to All Programs)

- Contemporary Educational Systems
- Cybernetics Applied to Pedagogy
- Design & Evaluation of Study Plans & Curriculum
- Economic & Educational Politics of Contemporary Mexico
- Experimental Pedagogy
- History of Education
- Methodology of Scientific Research
- Operations Research
- Pedagogical Research
- Philosophy of Education
- Philosophy of Science
- Probability & Statistics
- Systematization of Teaching

Courses Included in Each Specialization

Ciencias Biológicas (Biological Sciences)

- Advanced Ecology
- Bioeconomics
- Cytology
- Genetics
- Histology
- Human Biology
- Microbiology
- Natural Resources
- Parasitology
- Physiology

(continued)

Ciencias Sociales (Social Sciences)

Contemporary Economic Doctrines
Contemporary History of Mexico
Contemporary History of the World
Contemporary Sociological Theories
Economic Geography of Mexico
Economic Geography of the World
Philosophy of History
Political Theory
Social Anthropology
Social Sciences Methodology

Física y Química (Physics & Chemistry)

Applied Mathematics
Atomic & Molecular Structure
Chemical Periodicity
Design of Chemistry Experiments
Design of Physics Experiments
Modern Chemistry
Modern Physics
Organic Chemistry
Statics & Dynamics
Vector Analysis

Idiomas (Languages)

Advanced Composition
Advanced Conversation
American Literature
Comparative Phonology
English Literature
History of the English Language
Linguistics
Structural Grammar
Transformational Grammar

Lengua y Literatura Españoles (Spanish Language & Literature)

Comparative Literature
Contemporary Literature
Generative Grammar
History of Spanish Language & Romanticism
Literary Research Methodology
Literary Theory
Philology
Philosophy of Literature
Sociology of Literature
Transformational Grammar

Matemáticas (Mathematics)

Advanced Calculus
Differential Equations
Linear Algebra
Logic
Mathematical Analysis
Modern Algebra
Modern Geometry
Numerical Structures
Probability & Statistics
Statistics

Pedagogía (Pedagogy)

Contemporary Educational Systems
Curriculum Planning
Design of Experimental Models
Educational Administration
Educational Technol.
Experimental Pedagogy
Pedagogy of Atypical Population
Pedagogical Research
Philosophy of Education
Theory of Models Applied to Education

Psicología y Orientación Vocacional (Psychology & Vocational Orientation)

Differential Psychology
Dynamic Psychology
Evolutionary Psychology
Experimental Psychology
Modern Psychological Currents
Psychological Problems of Adolescents
Psychometrics
Psychophysiology
Seminar of Professional Information
Theory & Practice of Vocational Orientation

SOURCE: *E + A Enseñanza más Aprendizaje, Revista de la Escuela de Graduados de la Escuela Normal Superior de Nuevo León* (Monterrey, N.L., December 1979).

The program of study leading to the *maestría*, developed in consultation with the Facultad de Filosofía y Letras (Faculty of Philosophy and Letters) of UNAM, exists to educate professors for higher teacher training institutions as well as to enable graduates to contribute to research in the field of secondary education. The program is organized into *tetramestres* which divide the year into three periods, October to February, March to June, and July to September. The program, which usually requires two years or six *tetramestres* to complete, includes 23 courses, of which 13 are general and 10 relate to the area of specialization. (See Table 32 for complete program of study.) Degree requirements include a thesis which contributes to the solution of a specific educational problem at the secondary level. Grading is on a scale of 1 to 10 with 8 the minimum passing grade. (Graduate-level grading is discussed earlier in this chapter.)

Graduate Programs of Institutions Dependent on the Federal Government

Twenty-seven of the federal institutions offer graduate programs; thus, the federal category includes more institutions than any other category at the graduate level. Some of the federal programs are dependent on the Secretaría de Educación Pública/SEP (Ministry of Education), while others are dependent on other ministries. (See Chapter IV.) As at the undergraduate level, the graduate level federal institutions tend to be more specialized than institutions in other categories. While some of the institutions offer undergraduate as well as graduate programs, many offer only graduate programs. Because many of these institutions specialize in a particular field of study, an effort has been made to discuss as many institutions as possible in the following sections. As at the undergraduate level, the institutions are divided between those dependent on the SEP and those dependent on other ministries. The institutions dependent on the SEP are divided among technical institutions, teacher training institutions, and others.

GRADUATE PROGRAMS OF TECHNICAL INSTITUTIONS DEPENDENT ON THE SEP

Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional/CIEA-IPN (Center of Research and Advanced Studies of the National Polytechnic Institute)

Although the CIEA-IPN does have close ties with the IPN, it is actually a separate institution, created by presidential decree in 1961 and administered by the SEP. The CIEA-IPN, a selective institution whose enrollment in 1980-81 was only 400, offers only graduate programs of study leading to the *maestría* and *doctorado* degrees in a variety of scientific fields.

Admission to one of its programs is based on several criteria including previous grades, an intelligence test, an achievement test, and a personal interview. Generally, a *licenciatura* is required for admission to a *maestría* program; and a *maestría*, for a *doctorado* program. Some departments may require that the degree be in a particular field of study. All applicants must have a reading knowledge of English. The knowl-

edge of another foreign language may be required by individual departments. Students may be admitted on either a fulltime or part-time basis.

In order to accommodate the most gifted students, the admission requirement of a specific previous degree of the CIEA-IPN may be waived, depending on the results of the entrance examinations and personal interview. Even though students are encouraged to finish their *licenciaturas*, the CIEA-IPN will accept, for a *maestría* program, highly qualified students who have not yet finished their *licenciaturas*. The CIEA-IPN has even accepted exceptional graduates of an upper secondary program. Although students who have not yet completed a *licenciatura* will be assigned several prerequisite courses to compensate for the supposed lack of preparation, the CIEA-IPN does not award a *licenciatura*, no matter how many prerequisite courses have been taken. Similarly, it is also possible for students to continue toward the *doctorado* without the thesis and final examination necessary to earn the *maestría*.

The CIEA-IPN is organized into academic *departamentos* (departments). Although some courses may be shared by several departments, each department establishes its own internal organization and study plans, which vary considerably from department to department. The institution is reported to operate on a semester basis, but courses in some departments may vary in length from a few weeks to an entire semester. For example, in the Departamento de Genética y Biología Molecular (Department of Genetics and Molecular Biology), the program of studies leading to the *maestría en ciencias en genética y biología molecular* (genetics and molecular biology) requires two semesters of coursework prior to beginning the research. Not all the courses, however, are an entire semester in length. Some are *trimestre* courses; others are intensive 6- to 10-week courses; and still others are seminars which meet once a week during the semester.

Some departments at CIEA-IPN use a credit system; however, the definition of a credit varies. In the Departamento de Farmacología y Toxicología (Pharmacology and Toxicology), one credit is granted for every semester hour of classwork. In the Departamento de Matemática, each course is allotted one credit.

The programs of study leading to a *maestría* are generally two years (four semesters) in length, and some require a preliminary or preparatory semester. Programs in some departments include two semesters of coursework and two of research, while the coursework and research required in other departments is combined throughout the four semesters.

The courses which comprise the *doctorado* program are determined on an individual basis, considering the interests and previous education of the student. In general, students require two to three years to complete a *doctorado* program, at least one year of which is devoted to fulltime research. An *examen de candidatura* (candidacy examination) is required upon completion of the coursework.

Both the *maestría* and *doctorado* degrees require a thesis; however, the thesis for the *doctorado* degree must include original contributions which merit publication. Once the thesis is completed, students at both levels take a final examination based on the content of their respective thesis.

A letter grading system is used, with "A", "B", and "C" as passing grades and "R" *(reprobatoria)* as the failing grade. The letters "A", "B", and "C" do not represent Spanish words and are apparently used in a manner similar to the same grades in the United States. An average of "B" is required to graduate. Students with less than a "B" average at the end of a semester will be granted one more semester to raise the average or be removed from the institution. A student may also be removed for making one failing grade or for missing a scheduled examination without due cause.

Instituto Politécnico Nacional/IPN (National Polytechnic Institute)

Although the beginnings of graduate programs date to as early as 1937, graduate programs were officially established at IPN in 1961. In 1962, IPN offered six programs of study leading to a *maestría* degree, and four leading to a *doctorado* degree. Eleven of IPN's various schools, centers, and units (See Chapter IV for a description of the various divisions of IPN) now offer programs of study at the graduate level as well as at the undergraduate level. One center, the Centro Nacional de Cálculo/CeNac (National Center of Computation), offers programs of study at the graduate level only. In 1979-80, there were 2,529 students enrolled at the graduate level in 333 *maestría* programs, 8 *doctorado* programs, and 2 *especialista* programs.

Admission to a graduate program is decided on the basis of previous grades, the results of a foreign language test and, in some schools, the results of a general basic knowledge test. Admission to a *maestría* or *especialista* program requires the completion of a *licenciatura* program, while admission to a *doctorado* program requires completion of a *maestría* program or, in some cases, an *especialista* program. Graduates of a higher normal—teacher training—school program may also be accepted for admission to *maestría* or *especialista* programs. Students with a *licenciatura* in a field of study different from the one they wish to enter at the graduate level and students from a *licenciatura* program of less than four years duration may be required to take certain prerequisite courses at the undergraduate level before beginning a graduate program at IPN.

Most graduate programs are offered on a 15-week semester basis. Only the Centro Interdisciplinario de Ciencias Marinas/CICIMAR (Interdisciplinary Center of Marine Sciences) uses a system of *trimestres* at the graduate level. Although the exact number of weeks included in the *trimestre* is unknown, it is shorter than the semester, presumably 12 weeks. Every school, center, or unit of the IPN uses a credit system.

The difference in the length of the academic periods is reflected in the number of hours spent in class and the credit value assigned each class. In the semester system, 3 to 4 semester hours are spent in each class. The number of credits assigned each class ranges from 2 to 4. In theoretical courses, the number of credits and the number of semester hours are usually equal. In courses with both theoretical and practical components, the number of credits is usually less than the number of semester hours.

In the *trimestre* system, on the other hand, the number of credits assigned to theoretical and practical courses is equal to half the number of *trimestre* hours (comparable to quarter hours) spent in class. Since 4 to 8 *trimestre* hours are spent in each class, classes range in credit value from 2 to 4. The CICIMAR programs also include courses referred to as *estancias* (residencies), which are periods of supervised research, usually away from the center. These are assigned a number of credits equivalent to one-fourth the *trimestre* hours devoted to the residency.

Programs leading to the *especialista* degree are reported to include a minimum of 20 total credits. However, the two programs offered leading to the *especialista* degree in *medicina del deporte* (sports medicine) and in *medicina escolar* (school medicine) actually include 42 and 74 credits, respectively. Both of these programs are offered in the Escuela Superior de Medicina/ESM (Higher School of Medicine). The program in sports medicine includes courses in anthropology of sports, biophysics, biomathematics, biomechanics. biomechanics of exercise; physical education, sports and recreation; physical evaluation and improvement; the physiology of force; applied preventive medicine; functional morphology; psychology of sport; physical therapy; traumatology and orthopedics; and medical emergencies. The program in school medicine includes courses in anthropology, school and adolescent clinical pathology, school hygiene, preventive medicine, medicine of muscular-skeletal rehabilitation, pedology, pedopsychiatry, pedagogy, medical psychology and medical

sociology. All of the courses include a practical as well as a theoretical facet. No research is required.

Generally, programs leading to the *maestría* degree require a minimum of 32 credits to be completed in no less than one year and no more than three. Programs actually include between 32 and 51 credits. Although the *maestría* programs often include fewer credits than the two *especialista* programs, the emphasis is less practical. Many of the courses are completely theoretical. A thesis, based on research completed during the program, and its defense in a final examination, are required for graduation.

The IPN's Higher School of Medicine, for example, offers two *maestría* programs in *farmacología* (pharmacology) and *morfología* (morphology), in addition to its two *especialista* programs. The 43-credit pharmacology program includes courses in organic functional analysis, biostatistics, applied pharmacology, biomathematics, advanced biochemistry, theory and application of X-rays, hormonal pharmacology, clinical pharmacology, molecular pharmacology, physiology applied to pharmacology, advanced physiology, genetics, introduction to the philosophy of science, metabolism of drugs, microbiology applied to pharmacology, psychopharmacology, experimental chemotherapy and drug design, organic synthesis applied to pharmacology, basic techniques in radioisotopes and nuclear instrumentation, and toxicology.

The IPN *doctorado* program requires a minimum of 54 credits to be completed in three to five years. Programs of study leading to the *doctorado* are offered in *biología* (biology), *biología clínica* (clinical biology), *bioquímica* (biochemistry), *ciencias administrativas* (administrative sciences), *ecología* (ecology), *física* (physics), *inmunología* (immunology), and *microbiología* (microbiology). Upon completion of the coursework, students are required to pass an exam in a foreign language other than the foreign language presented for admission to the program. Students are also required to pass an exam which tests their ability to use knowledge acquired during the program in the consideration of concrete problems. Finally, a thesis and its defense are required for graduation.

Grading is based on a scale of 1 to 10 with 8 the minimum passing grade. Students who fail more than one course are removed from the institution.

Centro Nacional de Enseñanza Técnica Industrial/CeNETI
(National Center of Technical Industrial Education)

CeNETI offers a single graduate program leading to the *maestría* in *ingeniería* (engineering) in *administración industrial* (industrial administration). The 4-semester program includes the following courses:[8]

First Semester	Second Semester
Administrative Theory	Administrative Accounting
Cost Analysis	Industrial Manpower
Economic Analysis	Industrial Operations Research
Statistical Analysis	Marketing
Third Semester	**Fourth Semester**
Administration of Human Resources	Administrative Strategic Policies
Financial Administration	Systems of Information for Administration
Marketing Administration	10 Seminars
Production Administration	Thesis

A thesis, an *examen de grado*, and an overall average of 8 (on a scale of 1-10) are required for graduation.

8. ANUIES, *Los Estudios de Posgrado en México, 1978-79*, p. 738.

Graduate Programs in the System of Technical Institutions

The following institutions are part of the system of technical institutions dependent on the SEP which includes at the undergraduate level the Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes). (See Chapter IV.)

Centro Interdisciplinario de Investigación y Docencia en la Educación Técnica/ CIIDET (Interdisciplinary Center of Research and Teaching in Technical Education)

Located in Querétaro, Querétaro, CIIDET was founded in the mid-1970s as part of the ITR system, which offers education in industrial and service fields of study at the undergraduate level. The rapid expansion of the ITR system made the training of professors in educational sciences and research in technical education a high priority. CIIDET, established to respond to this need, offers a *maestría* program in education . . sciences and promotes research in technical education.

The basic degree offered by CIIDET is the *maestría en ciencias de la educación* (master's in education sciences) with areas of concentration in *comunicación educativa* (educational communication), *investigación educativa* (educational research), *medición y evaluación* (measurement and evaluation), and *planeación y administración educativa* (educational planning and administration). The school year, which begins in September and ends in May, is divided into two 15-week semesters. There is also a summer session from June to August. A system of credits is used in which each credit represents 1 semester hour of theoretical classtime or 3 semester hours of laboratory classtime.

Admission to the *maestría* program requires a *licenciatura* and an entrance examination. The entrance exam tests the students' knowledge of basic subjects required for the *maestría*, as well as knowledge of the English language. If adequate preparation in any area is not demonstrated through the entrance exam, any or all of the following prerequisite courses may be required: English, human development, mathematics, oral and written expression, and study techniques. These prerequisite courses are identified in the study plan and (according to available information) on transcripts by a number in the 3100s.

CIIDET's program of study is comprised of a total of 50 credits, half of which correspond to courses common to all areas of concentration and half of which correspond to courses in one of the specific areas of concentration. (See Table 33.) Three credits in the area of concentration are awarded for the preparation of the thesis. The ten courses common to all areas of concentration are identified by a number in the 3200s.

Table 33

Maestría en Ciencias de la Educación* (Master's in Education Sciences), CIIDET

Courses Common to All Concentrations

Course	Cr	Course	Cr
Development & Production of Audiovisual Materials	2	Introduction to Communication	2
Educational Philosophy	3	Research Methodology	3
Educational Psychology	3	Sociological-Cultural Foundations of Education	2
Educational Research Workshop	2	Statistics I	3
History of Education in Mexico	2	Statistics II	3
		Total	25

(continued)

Courses Specific to Each Concentration

Planeación y Administración Educativa (Educational Planning & Administration)

Course	Cr
Academic Administration	3
Admin. of School Personnel	2
Admin. of Student Affairs	2
Educational Legislation & Policies	2
Educational Planning & Devel.	3
Intro. to Educational Admin.	3
School Information & Communication	2
Thesis Workshop	3
Electives	5
Total	25

Medición y Evaluación (Measurement & Evaluation)

Course	Cr
Design & Evaluation of Programs of Intervention I	3
Design & Evaluation of Programs of Intervention II	4
Development of Instructional Packets	3
Educational Economics	2
Educational Legislation & Policies	2
Developmental Evaluation	4
Measurement	4
Thesis Workshop	3
Total	25

Comunicación Educativa (Educational Communication)

Course	Cr
Administration of Audio-Visual Departments	2
Audio & Television Production	3
Audio-visual Means of Measurement & Evaluation	3
Clinic for Improvement of Teaching Techniques	3
Educational Communication	3
Mass Communication Theory	3
Thesis Workshop	3
Electives	5
Total	25

Investigación Educativa (Educational Research)

Course	Cr
Curricular Planning	3
Design & Evaluation of Programs of Intervention I	3
Foundations of Educational Supervision	2
Principles of Curricular Development	3
Theory of Curriculum	3
Thesis Workshop	3
Electives	8
Total	25

*Centro Interdisciplinario de Investigación y Docencia en la Educación Técnica (Interdisciplinary Center of Research and Teaching in Technical Education).

Source: Secretaría de Educación Pública, *Estudios de Postgrado en los Institutos Tecnológicos Regionales Catálogo 1980*, Dirección General de Institutos Tecnológicos (México, D.F.: Complejo Editorial Mexicano, January 1980).

Most of the other courses in the program are those required for each area of concentration; however, some elective courses are allowed. Required courses in an area of concentration are designated with a number in the 3300s, elective courses with a number in the 3400s. Graduation requires a thesis and its defense.

All CIIDET professors are employed on a fulltime basis, and 40% have a doctoral degree. Many of their professors have been educated in the United States. Grading is on a scale of 1 to 10 with 7 the minimum passing grade. Some grading policies reflect the influence of the United States. For example, some courses may be offered on an *acreditadamo acreditada* (pass/fail) basis. Also, when all of the requirements for a course are not finished at the end of a semester, the course grade will be *incompleto* (incomplete).

Centro Regional de Estudios de Graduados e Investigación Tecnológica/CREGIT
(Regional Center of Graduate Study and Technological Research)

Like the CIIDET (see section above), the CREGITs were founded in the mid-1970s as a result of the rapid expansion of the system of Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes). Unlike the CIIDET, which specializes in educational sciences, the CREGITs offer graduate programs of study and promote research in technical fields of study related to those offered in the ITR system at the undergraduate level. There are now ten different CREGITs associated with the ITRs in the following cities: Celaya, Ciudad Juárez, Ciudad Madero, Chihuahua, Durango, La Laguna, Mérida, Oaxaca, Saltillo and Veracruz.

The CREGIT system offers nine different *maestría* programs. An individual CREGIT may choose to offer only one of the nine available programs of study; none of the CREGITs offers all of them. The nine fields of study are *bioingeniería* (bioengineering), *biotecnología* (biotechnology), *ingeniería eléctrica* (electrical engineering), *ingeniería electrónica* (electronic engineering), *ingeniería industrial* (industrial engineering), *metalurgia* (metallurgy), *planificación industrial* (industrial planning), *sistemas administrativos* (administrative systems), and *tecnología del petróleo y petroquímica* (petroleum and petrochemical technology).

Although the exact academic calendar varies from CREGIT to CREGIT, the school year is generally divided into two 15-week semesters and a summer session. A credit system is used in which 1 credit represents each semester hour of theoretical classtime or 3 semester hours of laboratory classtime.

Admission to one of the *maestría* programs generally requires a *licenciatura* and an entrance examination; however, certain programs may require a *licenciatura* in particular fields of study. If the results of the entrance exam indicate a lack of basic knowledge in certain areas, students may be required to take from two to four prerequisite courses, such as computer programming, mathematics, or probability and statistics. The exact prerequisite courses differ with the program of study. Prerequisite courses, which do not yield course credit, are designated with a number in the 3100s in the program of study and (according to available information) on transcripts.

The graduate programs of study at a CREGIT, which generally require two years to complete, include 30 to 40 credits or ten to twelve courses. Six credits are awarded for the preparation of the thesis. Like the ITR programs at the undergraduate level, courses which comprise a given *maestría* program are arranged in a network which illustrates the relationships between courses. (See description of federal technical institutes, Chapter IV.) Within the network, there are basic courses which are prerequisite to more specialized courses. Basic courses are designated with a number in the 3200s whereas more specialized courses are designated with a number in the 3300s. The program of study also includes some elective courses which are designated with a number in the 3400s. The programs of study are flexible in that students may select the courses to be taken each semester within restrictions imposed by the network.

Some CREGIT programs of study, including bioengineering, biotechnology, electrical engineering, and metallurgy, offer subspecializations or areas of concentration within the broad field of study. In some cases, the basic courses in a particular field of study are common to two or three different subspecializations. The programs of study in bioengineering and biotechnology have subspecializations in *alimentos* (foods) and *fermentaciones* (fermentations). The program in electrical engineering has subspecializations in *control* (control) and *potencia* (power). Finally, the program in metallurgy includes subspecializations in *metalurgia de procesos ferrosos* (metallurgy of ferrous processes), *metalurgia de procesos no ferrosos* (metallurgy of non-ferrous

processes), and *metalurgia física* (physical metallurgy). (See Table 34 for the complete program of study in Biotechnology.)

Graduation requirements include a thesis and its defense in an oral examination. Grading is on a scale of 1 to 100 with 80 as the lowest passing grade.

Table 34

Maestría Program in Biotechnology, Specializations in Foods and Fermentation, CREGIT*

Prerequisite Courses		Basic Courses	Credits
3101/Biochemistry		3201/Mathematics	3
3102/Microbiology		3202/Microbic Biochemistry	4
3103/Mathematics		3203/Enzymes	4
3104/Transportation Phenomena		3204/Biostatistics	3
		3205/Microbiology of Foods	4
		Total	18

Courses in Area of Specialization

Alimentos (Foods):	Credits	*Fermentación* (Fermentation):	Credits
3301/Biochemistry of Foods I	4	3311/Metabolic Regulation	4
3302/Biochemistry of Foods II	4	3312/Technology of Fermentation I	4
3303/Food Technology I	4	3313/Technology of Fermentation II	4
3304/Food Technology II	4	3314/Genetics	3
Electives	2	Electives	3
Thesis	6	Thesis	6
Total	24	Total	24

Source: Secretaría de Educación Pública, *Estudios de Postgrado en los Institutos Tecnológicos Regionales Catálogo 1980*, Dirección General de Institutos Tecnológicos (México, D.F.: Complejo Editorial Mexicano, January 1980).

*Centro Regional de Estudios de Graduados e Investigación Tecnológica (Regional Center of Graduate Study and Technological Research)

GRADUATE PROGRAMS OF TEACHER TRAINING INSTITUTIONS DEPENDENT ON THE SEP

The two tertiary teacher training institutions dependent on the SEP offering programs of study at the graduate level are the Escuela Normal Superior de México (Higher Normal School of Mexico) and the Universidad Pedagógica Nacional/UPN (National Pedagogical University). Each institution is oriented toward a different aspect of teacher education. The Higher Normal School of Mexico educates teachers for *escuelas secundarias* (lower secondary schools), while the UPN emphasizes education for preschool and primary school teachers. (See Chapter IV.)

Escuela Normal Superior de México/ENS (Higher Normal School of Mexico)

Although the ENS de México is a federal institution, it is quite independent. In response to the 1973 Federal Education Law, many higher normal—teacher training—institutions that offer graduate study have established graduate-level *maestría* programs. Although its study plans are unavailable, it appears that the ENS de México offers a program of study leading to the *doctorado en pedagogía* (doctorate in pedagogy) as its only program beyond the *licenciatura*.

Universidad Pedagógica Nacional/UPN (National Pedagogical University)

UPN currently offers programs of graduate study leading to the *especialización* degree in one of two fields: *administración escolar* (school administration) and *planeación educativa* (educational planning). While the UPN undergraduate programs are particularly oriented toward preschool and primary education, its graduate programs apply to education in general. The programs of *especialización* emphasize concrete or practical aspects of education which can be immediately applied. Admission to one of the programs of *especialización* requires an entrance exam, in addition to a *licenciatura* or graduation from a higher normal school.

The programs are organized on a semester basis, and a system of credits is used in which 2 credits represent every semester hour of class. The *especialización*, which is comprised of a total of 32 credits, usually is completed in two semesters; however, students are allowed up to four semesters to complete the program. Each of the programs of study includes four courses, worth 8 credits each. Two of these courses, educational evaluation and education and society in Mexico, are common to both programs. The remaining courses in the program in educational planning are educational planning in Mexico and planning methods; courses in the administration of resources and the theory of administration complete the program in school administration.

Programs leading to the *maestría* in the same two fields of study as the *especialización* recently have been authorized. Although plans are not yet final, the proposed programs are to be four semesters in length. Some of the same courses which comprise the *especialización* may also be included in the *maestría* program. Eventually, UPN plans to offer the *doctorado*. Unlike the *especialización*, both the *maestría* and *doctorado* programs will include research and a thesis.

GRADUATE PROGRAMS OF OTHER INSTITUTIONS DEPENDENT ON THE SEP

Centro de Investigaciones y Estudios Superiores en Antropología Social (Center of Research and Higher Studies in Social Anthropology)

In 1980, this institution acquired its current name, the Center of Research and Higher Studies in Social Anthropology. Dependent on the SEP and the Instituto Nacional de Antropología e Historia/INAH (National Institute of Anthropology and History), it was formerly called the Centro de Investigaciones Superiores del Instituto Nacional de Antropología e Historia/CIS-INAH (Center of Higher Research of the National Institute of Anthropology and History). The CIS-INAH, associated with the Escuela Nacional de Antropología e Historia/ENAH (National School of Anthropology and History) (see next institution described), offered a single program of study leading to the *doctorado en antropología* (doctorate in anthropology), while the ENAH offered programs of study in anthropology leading to the *licenciatura* and *maestría* degrees.

The Center now plans to establish programs of study leading to a *maestría* degree in addition to a *doctorado* program in *antropología social* (social anthropology). The new programs are not yet fully developed.

Information is available, however, on the *doctorado* program in anthropology previously offered in the CIS-INAH. Admission to the *doctorado* program required a *maestría* in anthropology or a similar social science, knowledge of English and another foreign language, and one year's experience in projects carried out by the center and INAH. The program itself was flexible, developed in accordance with the needs and interests of individual students. Each student was assigned an advisor or tutor who assisted in developing the program of study.

The study plan included courses and seminars, a research project and a thesis. The study of two different cultural areas was required, one of which had to be Mesoamerican. The other was chosen from among various options, including the Andean area, the Iberian Peninsula, the Mediterranean, or North America. The study of these areas preferably involved a period of field research. Two different conceptual specializations were also required, one of which became the subject of the thesis.

Graduation requirements included a thesis and a final examination, which consisted of a public presentation of the thesis before the researchers of the Center and a debate. Before the degree was awarded, the individual program of study had to be approved by the Center's academic commission.

Escuela Nacional de Antropología e Historia/ENAH
(National School of Anthropology and History)

ENAH, dependent on the SEP and the Instituto Nacional de Antropología e Historia (see above), established a graduate program leading to the *maestría in lingüística* (linguistics) in 1976. In 1979, it began offering another graduate program leading to the *maestría* in *antropología social* (social anthropology).

Admission to either of the programs requires a *licenciatura* in a related field of study and the completion of any required prerequisite courses. The program of studies, which usually requires two years to complete, is organized on a semester basis. A system of credits is used in which 2 credits represents every semester hour of theoretical or academic courses which require work outside class. (See discussion of credit system earlier in this chapter.)

The ENAH *maestría* program in linguistics, which includes at least 60 credits, is developed in accordance with the needs and interests of the individual student. Rather than a series of courses with fixed content, the program consists of a series of seminars, each worth 8 credits, and a thesis workshop, worth 4 credits. At least one seminar covers each of six compulsory areas of study: applied linguistics; language, society, and culture; linguistic methodology; semantics; synchronic and diachronic description in linguistics; and theoretical linguistics. Two seminars on an optional topic may or may not cover subjects in one of these six areas. Graduation requires a thesis and its defense in an oral examination.[9]

Escuela Nacional de Biblioteconomía y Archivonomía/ENBA
(National School of Library and Archive Science)

For a short time, ENBA offered a program leading to the *maestría* in *ciencias de la información* (information science) and *elaboración de tesauro* (indexing). This program

9. *Ibid.*, p. 736.

was specifically designed for graduates of the pre-1975 undergraduate-level *maestría* program (see Chapter IV). It was discontinued for lack of funds, and there were no graduates. Students who completed part of the program received a *certificado de estudios* (transcript).

Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete"/ENCRM (National School of Preservation, Restoration and Museum Science "Manuel del Castillo Negrete")

ENCRM is dependent on the SEP and the Instituto Nacional de Antropología e Historia/INAH (National Institute of Anthropology and History) (see Chapter IV). It offers graduate programs leading to the *maestría* in *arquitectura con especialidad en restauración de monumentos* (architecture with a specialization in monument restoration) and in *museología* (museum science).

Admission to the program in architecture requires a *licenciatura* in architecture, as well as an entrance examination. The program in museum science requires a *licenciatura* and one year of experience in museum work. Both programs require the knowledge of two foreign languages. Enrollment in either program is limited to 25 students a year, and students are admitted on a fulltime basis only.

Both programs involve one year of intensive study from September to June. The program in architecture is organized into four academic periods. The first three periods include 24 courses, such as archeology, architecture, colonial and nineteenth century architecture, materials preservation, etc. The fourth period is devoted to a research seminar, completion of the thesis, and professional practice.

The program in museum science is organized into three *trimestres*. The program of study comprises a total of 23 courses, one of which is a research seminar, and includes such courses as climatology and lighting, color and volume management, history of collections, museum maintenance, etc.

Graduation requires a thesis and its defense in an oral exam, both of which must be completed within two years of completion of the coursework.

GRADUATE PROGRAMS OF INSTITUTIONS DEPENDENT ON OTHER MINISTRIES

Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California/CICESE (Center of Scientific Research and Higher Education of Ensenada, B.C.)

Founded in 1973 and dependent on the Secretaría de Programación y Presupuesto (Ministry of Programming and Budget), CICESE is a federal institution which has been granted the status, *decentralizada* (decentralized). (See Chapter IV, Institutions Dependent on the Federal Government.)

Located in Baja California, CICESE is an educational and research institution which emphasizes the fields of applied physics, geophysics, and oceanography. It offers only graduate-level programs. Both its programs of study and its research are oriented toward the solution of national problems, particularly those of the state in which it is located. The teaching faculty of CICESE is composed of its researchers, all of whom are employed on a fulltime basis. All of the faculty have at least a *maestría*, some the *doctorado*.

CICESE is organized into three academic *departamentos* (departments), applied physics, geophysics, and oceanography, each of which offers programs leading to the *maestría en ciencias* (master's in sciences). In the Department of Applied Physics, the programs offered are *instrumentación electrónica y telecomunicaciones* (electronic instrumentation and telecommunications) and *óptica* (optics). The Department of Geophysics offers a program in *geofísica* (geophysics); the Department of Oceanography, programs in *ecología marina* (marine ecology) and *oceanografía física* (physical oceanography). Programs leading to the *doctorado* are currently being developed.

The academic year, which begins in August and ends in May, is divided into two 16-week semesters. There is also an intensive six-week summer session. A system of credits is used in which most courses are assigned 6 credits; lab courses, 8; and seminars, 2.

Admission to the *maestría* program requires a *licenciatura* in an engineering or scientific field, as well as an entrance exam, and knowledge of a foreign language. Students with an inadequate background in their field of study may be required to take certain prerequisite courses. The *maestría* program requires the completion of 68 course credits, 4 departmental seminar credits, and a thesis and its defense in an oral exam, all of which are to be completed in no more than three years. The programs are fairly flexible. Between 30 and 56 of the total credits correspond to required courses; the remainder correspond to courses selected from among those offered within the department, in other departments, and even in other institutions. A few basic courses, such as math or statistics, are included in the curriculum of more than one department.

CICESE's program in marine ecology, for example, may require any of the following prerequisites: biological oceanography (6 credits), biological oceanography seminar (2), chemical oceanography (6), chemical oceanography seminar (2), and geological oceanography (6). The program includes the following required courses: analysis of marine ecology (6 credits), departmental seminars (4), ecology of marine communities (6), ecology of marine primary producers (6), physical oceanography I (6), and statistical analysis (6). In addition to courses offered in other departments, students may choose from among the following elective courses offered in the Department of Oceanography: coastline processes (6 credits), ecology of marine benthos (6), ecology of marine nekton (6), ecology of marine zooplankton (6), experimental cultivation (6), marine contamination (6), marine resources (6), and population dynamics (6).

The proposed program of study leading to the *doctorado en ciencias* (doctorate in sciences) will require for admission the *maestría*, an entrance exam, and two foreign languages. The program will require the completion of 102 course credits, 8 seminar credits, a general candidacy exam, and a thesis and its defense in an oral exam, all of which must be completed within four years.

Grading within individual courses is based on the criteria selected by the professors, such as examinations, homework, and term papers. The final grade will take into consideration a student's performance throughout the semester, as well as the final exam grade. Final exams may be taken only once; there are no *exámenes extraordinarios* (extraordinary examinations). Grading is on a scale of 1 to 100 with 70 as the lowest passing grade. However, an average of 80 is required for graduation. Students are removed from the institution if they make grades below 80 in three courses, fail two courses, or obtain an overall average of less than 80 in two semesters. CICESE estimates that 90% of their students finish their programs—24% with an average of 80, 62% with an average of 90, and 13% with an average of 100.

Colegio de Postgraduados, Institución de Enseñanza e Investigación en Ciencias Agrícolas (College of Postgraduates, Institution of Education and Research in Agricultural Sciences)

The College of Postgraduates was founded in 1959 as part of the Escuela Nacional de Agricultura (National School of Agriculture) which was dependent on the Secretaría de Agricultura y Recursos Hidráulicos/SARH (Ministry of Agriculture and Water Resources). In 1973, the National School of Agriculture became the Universidad Autónoma de Chapingo (Autonomous University of Chapingo). The College of Postgraduates, however, remained under the SARH as a separate institution and has since been granted the status, *decentralizada* (decentralized). (See Chapter IV.) Almost half of the college's professors have *doctorado* degrees, and 94% are employed on a fulltime basis.

The College of Postgraduates offers only programs of study leading to the *maestría* and *doctorado* degrees in a variety of agricultural and administrative fields of study. Admission to any of the *maestría* programs generally requires a *licenciatura* in agricultural engineering; however, graduates in other fields of study who have professional experience in agriculture may also be admitted. Admission to the *doctorado* programs requires a *maestría* in a related field of study.

Programs of study are offered in ten different academic *centros* (centers), each of which concentrates on one of the following fields: animal science, botany, economics, edaphology, entomology and acarology, genetics, hydrosciences, phytopathology, rural development, and statistics and calculus. The academic year is divided into two semesters of 18 weeks each. There is also a six-week intensive summer session. The college uses a system of credits in which each credit represents one semester hour of coursework or 3 semester hours of laboratory or fieldwork. The *maestría* programs are generally two years in duration and include a minimum of 30 credits, 6 of which are dedicated to the preparation of the thesis.

The College of Postgraduates' programs are flexible, developed on an individual basis depending on the student's preparation, area of specialization within the center, and proposed research. The programs, which are often interdisciplinary in nature, include both required and elective courses. The electives may be chosen from among courses offered in the center in which the student is enrolled or from those offered in different centers. In some centers, the elective courses chosen constitute an area of concentration or a subspecialization within the field of study. For example, the Center of Animal Science, which generally emphasizes specific problems pertaining to the productivity of domestic animals, offers three subspecializations: *forrajes* (forage), *genética y mejoramiento animal* (genetics and animal improvement), and *nutrición animal* (animal nutrition). The Center of Economics, which offers programs in economics as it relates to agriculture, offers several different subspecializations, such as *desarrollo rural* (rural development) and *economía de la producción* (production economics).

Graduation, from either the *maestría* or *doctorado* program, requires a thesis and its defense in an oral examination. Grading is on a scale of 1 to 10 and an average of 8 is required for graduation. Furthermore, students may make no grade below 8 in courses taken in the center in which they are enrolled and no grade below 7 in courses taken in other centers. The college estimates that 90% of its students graduate, 5% with grade averages between 8 and 8.5, 40% with grade averages between 8.5 and 9.0, 35% with grade averages between 9.0 and 9.5, and 10% with grade averages between 9.5 and 10.

Colegio Superior de Agricultura Tropical/CSAT (Higher College of Tropical Agriculture)

CSAT is a federal institution dependent on the Secretaría de Agricultura y Recursos Hidráulicos/SARH (Secretary of Agriculture and Water Resources). CSAT offers programs of study at both the undergraduate and graduate levels. Its graduate programs lead to the degree of *maestría en ciencias* (master's in sciences) in three different branches of tropical agriculture: *agronomía* (agronomy), *biología* (biology), and *ciencia animal* (animal science).

Admission to one of the *maestría* programs requires a *licenciatura*. The academic year, which begins in August and ends in May, is divided into two semesters. There is also an intensive summer course. A system of credits is used; however, there is no apparent method by which courses are assigned a value in credits. Individual courses range from 1 to 6 credits in value. A normal course load is 10 to 15 credits per semester.

Within each of the three branches of CSAT, two or three areas of concentration or specializations are offered. In agronomy, specializations in *agricultura tropical* (tropical agriculture) and *suelos* (soils) are offered. The biology branch includes specializations in *ecología* (ecology), *entomología* (entomology) and *fitopatología* (phytopathology). Finally, specializations in *fisiología animal* (animal physiology), *forrajes* (forages), and *genética* (genetics) are offered in the animal science branch. Each program includes a minimum of 30 credits to be completed in no less than 18 months. Included in the 30 credits are a maximum of 6 credits dedicated to the preparation of the thesis and 3 credits to seminars. The remainder of the credits correspond to courses taken in the area of specialization or courses selected from other areas. CSAT has also established *convenios* (agreements) with other institutions such as the Colegio de Postgraduados (College of Postgraduates) whereby students may complete their programs with courses offered at other institutions.

To graduate, a student must prepare a thesis on an original theme of benefit to tropical regions, must defend the thesis in an oral exam, and must maintain an overall average of 8 on a scale of 1 to 10. The minimum passing grade in courses in the main area of interest of the student is 8; the minimum passing grade in other courses is 7.

Escuela de Salud Pública (School of Public Health)

The School of Public Health is a federal institution dependent on the Secretaría de Salubridad y Asistencia/SSA (Ministry of Health and Welfare). Except for a few short programs at the upper secondary and tertiary levels, the School of Public Health offers primarily graduate programs of study at the *maestría* level.

Admission to one of the *maestría* programs requires a *licenciatura*, an entrance exam, and at least two years of professional experience related to the *maestría* program to be studied. Although the undergraduate preparation required for some fields is more specific than for others, most programs accept students with *licenciaturas* in administration, dentistry, engineering, medicine, psychology, the social sciences, and veterinary medicine. Most students have a scholarship in that they continue to receive their salaries from the institution where they accomplished their professional experience while attending the School of Public Health.

Programs of study leading to the following degrees are offered: *maestría en administración de hospitales* (hospital administration), *maestría en ciencias con énfasis en epidemiología* (sciences with emphasis in epidemiology), *maestría en salud pública* (public health), and *maestría en salud pública con énfasis en paludismo y otras enfermedades parasitarias* (public health with emphasis in malaria and other parasite diseases). Ex-

cept for the program in sciences with emphasis in epidemiology, which is two years in length, all are one-year programs.

The ten-month academic year is divided into four periods, February to the end of May, June to the end of July, August to the end of October, and November to mid-December. Approximately 40 hours per week are dedicated to the program. The curriculum is fairly evenly divided between classroom activities and fieldwork, with most of the fieldwork occurring in the last period. The curriculum consists of required and elective courses and additional courses for students without a medical background. The elective courses permit the program to better respond to the needs and interests of the student and of the institution or agency for which the student works. The first period, which involves the study of the general principles of public health, includes courses common to all the *maestría* programs.

The second and third periods of the hospital administration program involve the review of different techniques and procedures for hospital administration. Some fieldwork and research are also included in these two periods. The fourth period is devoted exclusively to an administrative residency in a hospital.

During the second period of the public health program, the functions of public health and its service systems are analyzed. The third period includes academic courses as well as practical activities related to research in the health sector. The fourth period is devoted to interdepartmental fieldwork, designed to facilitate the application of knowledge acquired during the other periods. Fieldwork, which includes the planning, execution, and analysis of research in epidemiology or health services, serves to identify the different methods for the study and solution of health problems.

The second period of the public health program with emphasis in malaria and other parasite diseases is the same as that of the program in public health. During the third period, the theoretical and methodological aspects of the study of parasite diseases are reviewed. The fourth period is devoted to the study of the different parasite diseases which constitute a health problem in Mexico, as well as to the strategies for combatting these diseases. Field research is also carried out in a region of the country with a parasite problem.

The first year of the 2-year program in sciences with emphasis in epidemiology is identical to the program in public health. In fact, students who have completed the *maestría* in public health are admitted directly to the second year of the program. The second year, which also includes ten months of study, is divided into two periods. As in the other programs, approximately 40 hours per week are devoted to the program. The curriculum is evenly divided between theoretical and practical academic activities and applied research. Courses are offered in the research centers of the SSA and in other institutions, as well as in the School of Public Health. The first period includes the study of the scientific method and its application to epidemiology to prepare students to design and carry out research in epidemiology. This period also includes a residency in a hospital or research institution. During the second period, the student carries out a research project in epidemiology.

A report on the research carried out during the various programs, supported by fieldwork and a period of residency, constitutes the thesis required to graduate. A descriptive grading system, "MB/*muy bien*," "B/*bien*," "S/*suficiente*," "NA/*no acreditada*," is used. Although "S" is the minimum passing grade, an average of "B" is required to graduate.

Escuela Nacional de Fruticultura (National School of Fruit Cultivation)

The National School of Fruit Cultivation, dependent on the Comisión Nacional de Fruticultura (National Commission of Fruit Cultivation), offers only graduate study. The basic degree offered is the *maestría en fruticultura* (fruit cultivation) with spe-

cializations in *industrialización* (industrialization), *manejo y fisiología de postcosecha* (handling and physiology of post-harvest), and *producción* (production).

Admission to the *maestría* program requires a *licenciatura*. Enrollment is limited to ten students in each specialization. An entrance examination is also required to determine whether certain prerequisite courses are needed. The specific prerequisites vary slightly from specialty to specialty but are selected from among the following: biochemistry, botany, edaphology, English, industrial engineering, microbiology, statistics, and vegetal physiology. Excluding the necessary prerequisites, the program is four semesters long. The first three semesters include a total of 15 to 18 semester-long courses. The fourth semester involves a period of research and the preparation of the thesis.

The program in industrialization, which emphasizes industrial fruit processing techniques, includes courses in biochemistry, chemical analysis of fruits, economic analysis of fruit production projects, fermentation, fruit processing, industrial engineering, industrial hygiene, microbiology, and statistics. The program in the handling and physiology of the post-harvest includes courses in advanced vegetal physiology, commercialization, the post-harvest handling of fruits, fruit biochemistry, fruit cultivation, phytopathology, and statistics. The program in production emphasizes vegetal physiology (to improve fruit quality and productivity). In addition, there are courses in agriclimatology, ecology, entomology, experiment design, fruit cultivation, handling and cultivation of fruits, nutrition of fruit trees, plant propagation, phytopathology, and soils.

Graduation requirements include a thesis and its defense in an oral exam.[10]

Instituto de Formación Profesional (Institute of Professional Training)

The Institute of Professional Training is a federal institution dependent on the Procuraduría General de Justicia del Distrito Federal (Attorney General of the Federal District). In addition to short courses at the upper secondary and tertiary levels, the institute offers a single graduate program leading to the *maestría en criminología* (criminology).

Admission to the *maestría* program requires a *licenciatura* in law, medicine, psychology, sociology, social work, or graduation from a tertiary teacher training institution. The program is one year long, from October 1 to September 30. Classes are offered in the evenings only. In addition to completion of the coursework, graduation requires completion of a thesis and its defense in an oral examination.

Instituto Nacional de Astrofísica, Optica y Electrónica/INAOE (National Institute of Astrophysics, Optics and Electronics)

INAOE, a federal institution whose dependency is not clear, offers programs leading to the *maestría* and *doctorado* degrees in three different areas of specialization: *dispositivos en electrónica* (electronic devices), *óptica* (optics), and *sistemas en electrónica* (electronic systems). The institution operates on a semester system, with semesters from August to December and from January to April.

Admission to one of the *maestría* programs requires a *licenciatura* in engineering, physical sciences, or a related field. Each *maestría* program includes 12 courses which normally require three semesters to complete. All three *maestría* programs include the following four courses: electromagnetic theory, linear systems theory, mathematical methods of physics, and numerical methods. Each program also includes six other required courses and two elective courses.

10. *Ibid.*, p. 761.

The six required courses in the field of electronic devices are circuits analysis, physics of semiconductors, principles of modern physics, principles of semiconductors, quantum mechanics, and solid state I. The six required courses in the field of optics are electronic instrumentation, geometrical optics and design, optics laboratory I and II, and physical optics I and II. The required courses in the program in electronic systems are circuits analysis, design of digital systems, digital processing of signals, linear systems theory, principles of devices, and systems of digital control. Graduation requires a thesis, an examination based on the thesis, and a thesis presentation to the institute. A maximum of two years from the time a student begins the program is allowed to complete all the degree requirements.

Admission to INAOE's *doctorado* program requires a *maestría* degree and an entrance exam. Each of the three programs of study includes eight courses chosen in consultation with professors and advisors of the institute. Completion of these courses usually requires five semesters. In addition to the thesis and its defense in an exam, graduation requires an oral and written foreign language exam, a general exam to evaluate the student's knowledge of the field of study, and a thesis presentation to the institute. From the time a student begins the program, a maximum of five years is allowed for the degree requirements to be completed.

Grading is on a scale of 1 to 10 with 6 the minimum passing grade. However, an overall average of at least 7.5 is required for the *maestría* degree, and 8.5 for the *doctorado*. Students who obtain an overall average of less than 7.0 in any given semester, obtain grades of 6 in four courses in the program, or obtain a failing grade in two courses are not allowed to continue their programs of study.[11]

Instituto Nacional de Pediatría-Hospital del Niño (National Institute of Pediatrics-Children's Hospital)

The National Institute of Pediatrics, dependent on the federal agency, Desarrollo Integral de la Familia/DIF (Integral Development of the Family), offers a three-year residency program leading to the degree of *especialista en pediatría* (pediatrics). Each year's program includes an entire calendar year which begins in March and ends in February. In addition to an undergraduate degree in medicine and an entrance exam, admission requires at least one year of experience in general surgery or pediatrics. Applicants must be at least 34 years of age.[12]

Instituto Nacional de Perinatología (National Institute of Perinatology)

The National Institute of Perinatology is dependent on the federal agency, Desarrollo Integral de la Familia/DIF (Integral Development of the Family). It offers a single program leading to the degree of *especialista en perinatología* (specialist in perinatology). Admission to the program requires completion of an undergraduate degree in medicine with an overall average of 9.[13]

Universidad del Ejército y Fuerza Aérea (University of the Army and Air Force)

A federal institution dependent on the Secretaría de la Defensa Nacional/SDN (Ministry of National Defense), the University of the Army and Air Force is com-

11. *Ibid.*, p. 1,033.
12. *Ibid.*, p. 698.
13. *Ibid.*, p. 333.

posed of several different *escuelas* (schools). (See Chapter IV.) Only its Escuela de Graduados de Servicio de Sanidad (Graduate School of Health Service) offers study at the graduate level. Programs of study are offered leading to the degree of *especialista* in a variety of medical specializations. Admission requires an undergraduate degree in medicine and completion of the one-year *residencia rotatoria* (rotating residency).

The programs and their lengths are as follows (a total of 1,620 hours is devoted to each program each year):

—One year: *radiodiagnóstico* (radio diagnostics).

—Two years: *anestesiología* (anesthesiology), *cirugía plástica y reconstructiva* (reconstructive & plastic surgery), *medicina física y rehabilitación* (physical medicine & rehabilitation), *medicina nuclear y seguridad radiológica* (nuclear medicine & radiological surgery), *pediatría médico-quirúrgica* (pediatric surgery), *residencia en gineco-obstetricia* (gynecology-obstetrics residency), *residencia en medicina interna* (residency in internal medicine), *residencia en pediatría* (residency in pediatrics), *urología* (urology).

—Three years: *cirugía general* (general surgery), *cirugía oncológica* (oncological surgery), *cirugía pediátrica* (pediatric surgery), *oftalmología* (ophthalmology), *ortopedia y traumatología del sistema músculo-esquelético* (orthopedics & traumatology of the muscular-skeletal system), *otorrinolaringología* (otorhinolaryngology), *psiquiatría general* (general psychiatry).

—Four years: *neurocirugía* (neurosurgery), *patología* (pathology).[14]

Graduate Programs of Private *Libre* (Free or Independent) Institutions

Five of the eight institutions in Mexico which have been granted *libre* (free or independent) status offer programs of study at the graduate level. Three of them, the Centro de Investigación y Docencia Económica, A.C./CIDE (Center of Economic Research and Education), El Colegio de México (the College of Mexico), and El Colegio de Michoacán (the College of Michoacán), offer primarily graduate study.

In addition to its undergraduate programs, the Instituto Tecnológico Autónomo de México/ITAM (Autonomous Technological Institute of Mexico) offers the *maestría* in *administración* (administration), with areas of concentration in *comercialización* (commercialization), *finanzas* (finance), and *organizaciones* (organizations).

The Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies) offers *maestría* and *doctorado* programs, in addition to its undergraduate programs. At its main campus in Monterrey, ITESM offers the *maestría* in a variety of fields, including administration, agriculture, chemistry, computer science, engineering, letters, and physics. It offers three *doctorado* programs, in *parasitología agrícola* (agricultural parasitology), *química* (chemistry), and *uso y conservación del agua* (water use and conservation). Five branches of ITESM, Unidad Ciudad de México, Unidad Irapuato, Unidad Laguna, Unidad Saltillo, and the extension of the Unidad Ciudad de México in Guadalajara, Jalisco, offer a *maestría* in *administración* (administration). (See Chapter IV for a description of the various branches of ITESM.)

14. *Ibid.*, p. 601.

In the following sections, two of the private free or independent institutions, the Center of Economic Research and Education and the College of Mexico, are discussed in greater detail.

Centro de Investigación y Docencia Económica, A.C./CIDE (Center of Economic Research and Education)

CIDE is a private institution which has been granted free or independent status. Its programs, offered only at the graduate level, lead to the *maestría* in *administración pública* (public administration) and *economía* (economics). The professors of the institute, who are also researchers, are all fulltime; half of them have a *doctorado* degree, and half a *maestría*.

Admission to one of the *maestría* programs requires a *licenciatura*, letters of recommendation, and an entrance exam which includes an exam in mathematics and statistics, an exam in either administration or economics, depending on the program, and a general essay. Admission is limited to 30 students a year in each program. Only fulltime students are permitted to enroll, and students with Mexican citizenship are on a CIDE scholarship.

Both programs are two years or four semesters in length. In some cases, an introductory course may be required. The program in public administration is composed of a common core of courses and courses in one of two optional specializations: *administración de empresas públicas* (administration of public businesses) and *administración del sector central* (administration of the central sector). During the third and fourth semesters, students are required to do fieldwork in organizations in the public sector under the direction of professors in the Center. See Table 35 for the program in public administration.

The economics program offers the student a foundation in economic theory as well as training in methods and techniques of empirical research. Introductory courses include introduction to the social sciences, national accounting, and statistics; first semester courses are economic theory I, math, and economic history of developed countries; second semester courses are applied economics I, economic theory II, and

Table 35

Maestría* Program (Two Specializations) in *Administración Pública* (Public Administration), CIDE

Specialization: Administration of Public Businesses	Common Core of Courses	Specialization: Administration of Central Sector
	Introductory Courses	
	Administration	
	Economics	
	Quantitative Methods	
	First Semester	
Business Economics	Organization Theory	Macroeconomic Analysis
	Socio-Political Anal.	
	Structure & Judicial	
	Regulation of State	

(continued)

	Second Semester	
Accounting & Managerial Control	Decisions Theory	Governmental Accounting & Public Budgets
Administration of Production	General Theory of Public Admin.	Theory of the State
	Quantitative Methods	
	Third Semester	
Finances	Human Resources Admin.	Analysis of Public Politics I
Operations Research	Political Regimes & Functioning of Public Admin.	Public Finances
	Fourth Semester	
Commercialization	Political Economics	Administration & Planning of Development
Management & Control of Management in State Business	Electives: International Economic Relations, or Local & Regional Administration, or Economics (to be defined)	Analysis of Public Politics II

Source: Centro de Investigación y Docencia Económica, A.C. (pamphlet).

*Centro de Investigación y Docencia Económica, A.C. (Center of Economic Research and Education).

the development of Latin America; third semester includes applied economics II, economic theory III, political economics, and the theory of the state and political systems. During the fourth semester, students take four elective courses, in addition to a course in Mexican economics, chosen from courses in one of the following areas: development and political economics, economic theory, international relations, public administration, political science, and quantitative methods. A research project may be substituted for two courses during the last semester.

El Colegio de México (the College of Mexico)

The College of Mexico has its origins in La Casa de España en México (The House of Spain in Mexico), which was founded in 1938 as an educational center for academic refugees from the Spanish civil war. In 1940, it became the College of Mexico, a private educational institution, and was granted *libre* status in 1962. Although the college offers one undergraduate program leading to the *licenciatura* in *relaciones internacionales* (international relations), the College of Mexico is primarily a graduate level institution, offering education at both the *maestría* and *doctorado* levels in several humanities and social science fields. In 1977-78, 85% of the 200 students were graduate students.

The facilities of this prestigious institution include a library with over 200,000 volumes. Approximately 85% of the faculty are employed on a fulltime basis. Admission to either a *maestría* or a *doctorado* program requires at least a *licenciatura*, although in some cases, students may be admitted prior to completing all the undergraduate degree requirements. Applicants must be under age 35, and must have sufficient knowledge of English and French to undergo a personal interview in those languages.

Admission is highly selective; in general, only half of the applicants to the *maestría* programs and a quarter of the applicants to the *doctorado* programs are accepted. Applicants to any given program are not accepted every year, but rather, a group of

applicants is accepted into a program as an earlier group completes the program.

Programs of study are offered in one of six academic centers: *Centro de Estudios del Asia y Africa del Norte* (Center for Asian and North African Studies), *Centro de Estudios Económicos y Demográficos* (Center for Economic and Demographic Studies), *Centro de Estudios Históricos* (Center for Historical Studies), *Centro de Estudios Internacionales* (Center for International Studies), *Centro de Estudios Lingüísticos y Literarios* (Center for Linguistic and Literary Studies), and *Centro de Estudios Sociológicos* (Center for Sociological Studies). Programs of study leading to the *maestría* are offered in *ciencia política* (political science), *demografía* (demography), *desarrollo urbano* (urban development), *economía* (economics), and *estudios de Asia y Africa del Norte* (Asian and North African studies). Programs of study leading to the *doctorado* are offered in *ciencias sociales: sociología* (social sciences: sociology), *historia* (history), *lengua y literatura hispánica* (Spanish language and literature), and *letras españolas: lingüística* (Spanish letters: linguistics).

The academic year is divided into two 17-week semesters. Classes and seminars normally meet 3 hours each week. The *maestría* programs are generally two years or four semesters in length. Four of the programs, in Asian and North African studies, demography, economics, and urban development, also require an introductory or prerequisite year or *trimestre*, depending on the program. See Table 36 for courses included in each program of study.

The program in Asian and North African studies offers two general orientations: language and literature; or a field such as history, international relations, or political

Table 36

Programs Leading to the Maestría, the College of Mexico

Ciencia Política (Political Science)	*Estudios de Asia y Africa del Norte* (Asian and North African Studies)	*Economía* (Economics)
	Introductory Year	Preparatory *Trimestre*
	Directed Readings on the Cultural History of Asia	Economic Analysis I
	Intensive Language Course	Mathematics I
First Semester	First Year	First Semester
Developmental & Political Economics	Language Course	Economic Analysis II
Philos. of Science	Methodological Seminars I (history, social sciences, linguistics, etc.)	Economic Theory I
Political Philos.		Mathematics II
Statistics	Seminars on Selected Topics	Statistics I
Second Semester		Second Semester
International Relations Theory		Economic History I
Political Sociology		Economic Theory II
Political Theory		Mathematics III
Public Administration		Statistics II

(continued)

Third Semester	Second Year	Third Semester
Development & Politics Outside Mexicc	Research Seminar	Economic History II
Modern Mexican Political System	Translation Seminar	Economic Theory III
Political Parties & Pressure Groups in Mexico		Mexican Economics
Political Process in Mexico		Elective
Fourth Semester		Fourth Semester
Thesis Seminar		Economic Theory IV
		Thesis Seminar
		Elective

Demografía (Demographics)	*Desarrollo Urbano* (Urban Development)
Preparatory Course	Preparatory Course
General Intro. to Study of Populations, Basic Element of Demographic Analysis & Mathematics	English or French
	Historic Analysis of Urban Development
	Intro. to Economics
	Intro. to Statistical Methods
First Semester	First Semester
Demographic Analysis I	Economic Theory I
Economics I	Econ. Theory of Spatial Organization
Intro. to Social Sciences	Intro. to Sociopolitical Theory
Statistics I	Statistical Methods
Second Semester	Second Semester
Demographic Analysis II	Economic Theory II
Development & Population	Process of Urbanization in Latin America and Mexico
Economics II	Theories on Organization of Urban Space
Statistics II	Urban & Regional Development
Third Semester	Third Semester
Demographic Analysis III	Planning Theories, Instruments & Policies I
Population Studies Seminar: Fertility	Political Economics of Urbanization
Pop. Studies Seminar: Mortality	Specialization Seminar
Pop. Studies Seminar: Spatial Distribution, Migration & Urbanization	Thesis Seminar
Fourth Semester	Fourth Semester
Pop. Studies Seminar: Work Force	Planning Theories, Instruments & Policies II
Seminar on Politics of Population	Specialization Seminar
Thesis Seminar	Thesis Seminar

SOURCE: ANUIES, *Los Estudios de Posgrado en México 1978-79*, pp. 753-755.

science. Studies in either of these two orientations may emphasize either the contemporary or traditional world. Special attention is given to the mastery of the chosen foreign language to permit the use of educational materials in that language. The program in demography consists of theoretical and methodological background courses, laboratory work which deals with concrete problems, and interdisciplinary seminars and conferences on topics not otherwise covered in the program. During the last two semesters of the program in economics, students may choose their elective courses from among those offered in one of the following areas: economic history, economic theory, and Mexican economics. All five *maestría* programs include a research or thesis seminar in the final semesters. Graduation requires a thesis and its defense in an examination.

The *doctorado* programs of the College of Mexico are all six semesters in duration and involve courses as well as extensive research. The first four semesters of the program in history are dedicated to seminars in general or Mexican history; the next two semesters are spent in research seminars.

The programs in Spanish language and literature and Spanish linguistics include at least 17 courses and seminars. The following courses and seminars are shared by the two programs: general linguistics, the philosophy of science, research methodology, research techniques, semantics, and the structure of Spanish. Beginning in the second year, students begin the research which leads to the thesis, choosing a specific topic from one of the following areas of research: applied linguistics, linguistics, literary theory and criticism, and Spanish and Hispanoamerican literature.

The courses which constitute the program in sociology are divided into three groups. The first group includes courses, such as the beginnings of sociological thought, classical and modern themes in sociology, class theory, and the theory of the social structure, whose objective is the systematic study of sociological theory. The second group of courses, which focuses on research methodology, includes courses such as epistemology, logic, research techniques, and statistics. The third group consists of elective courses. Graduation from one of the *doctorado* programs requires a thesis and its defense in an examination.[15]

Graduate Programs of Private Institutions Whose Programs Have Official Validity

Of the private institutions whose programs of study have been incorporated by a public institution or recognized by a federal or state government agency, 19 offer graduate-level programs. Among these institutions, all types of recognition or incorporation are represented; however, many of them have programs of study incorporated by the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico) or recognized by the Secretaría de Educación Pública/SEP (Ministry of Education). In the following sections, a few of these institutions of higher education are discussed.

Escuela Normal Superior de Oaxaca, A.C. (Higher Normal School of Oaxaca)

The Higher Normal School of Oaxaca is a private teacher training institution whose programs of study are recognized by the state of Oaxaca. The higher normal schools in Mexico exist to educate teachers for the lower secondary schools and the upper secondary-level normal schools. As a result of the 1973 Federal Education Law, many

15. T. Noel Osborn, *Institutional Report on El Colegio de México, Mexico City, Mexico* (N.Y.: Institute of International Education, December 1977).

have begun to institute graduate programs of study leading to a *maestría*. (See teacher training, Chapter VI.) The Higher Normal School of Oaxaca, which instituted its graduate programs in 1979, is one of the few higher normal schools in Mexico to offer graduate study leading to both the *maestría* and *doctorado* degrees.

The program of study leading to the *maestría* in *educación media* (secondary education) requires for admission a *licenciatura* or graduation from a higher normal school, as well as knowledge of a foreign language. The program is offered on a *semiabierto* (semi-open) basis in response to the needs of working teachers. The semi-open system is based on two *fases* (phases): *pre-escolarizado* (independent study) and *escolarizado* (classroom study).

The independent study phase, which begins in September and ends in June, is divided into two semesters. Three courses are studied each semester. (See Table 37). During this phase, students continue to hold a teaching position. The Higher Normal School of Oaxaca furnishes them with study guides for independent study. Completion of the written assignments outlined in the study guide is required to enter the classroom study phase.

The classroom study phase is offered during the months of July and August or during the months of December and January for students who may be working during July and August. This phase, which is divided into two semesters of three weeks each, involves intensive study of the same subjects studied in the previous phase. Three courses are offered each semester. A total of 60 hours of class are devoted to each course. These courses may take place in the Higher Normal School of Oaxaca or in its branches in Guadalajara and Mexico City. Graduation requirements include a research project and its defense in an examination, as well as an examination in a different foreign language from the one required for admission into the program.

The program leading to the *doctorado* in *educación media* (secondary education) requires a *maestría* for admission. The program of study generally requires two years to complete. The specific courses that comprise the program are not available, and it is reported that the program consists primarily of independent study and research. Graduation requires a thesis and its defense in a professional examination.

Table 37

***Maestría en Educación Media* (Secondary Education), Higher Normal School of Oaxaca**

First Semester: Design & Statistics of Pedagogical Research; Seminar on Sociological Problems of Secondary Education in Mexico; Seminar on Philosophic Currents in Mexican Education.

Second Semester: Educational Psychology; Seminar on Administration of System of Secondary Education; Planning the Secondary Educational System.

Third Semester: Seminar on Contemporary Cases of Innovation of Learning Systems; Seminar on Contemporary Currents in Pedagogy; Seminar on Specific Learning Problems.

Fourth Semester: Research Seminar on Contemporary Economic, Political, & Social Problems of Mexico; Presentation of Research Project; Activities Necessary for the Degree.

Source: ANUIES, *Los Estudios de Posgrado en México 1978-79*, pp. 1015-1018.

Instituto Tecnológico y de Estudios Superiores de Occidente/ITESO (Institute of Technology and Higher Studies of the West)

Located in Guadalajara, Jalisco, ITESO is a private institution whose programs of study are recognized by the Secretaría de Educación Pública/SEP (Ministry of Education). Its single graduate program of study, leading to a *maestría* in *desarrollo humano* (human development), was established in 1975. The *maestría* program, offered in ITESO's Division of Economic-Administrative Sciences, requires for entry a *licenciatura*.

The program of study may be oriented toward one of four subspecializations: *crecimiento personal y laboral* (personal and professional growth), *educación* (education), *familia* (family), and *pastoral* (pastoral). The completion of six prerequisite courses, analysis of the national reality, developmental psychology, general psychology, personality theory, psychopathology, and sociology, is required prior to beginning the four-semester program. Each of the four semesters includes required courses common to all the subspecializations as well as courses specific to one of them. A total of 14 courses, such as foundations of orientation and interviewing techniques, are common to all subspecializations. Thirteen more courses are specific to each subspecialization.[16]

Universidad Autónoma de Guadalajara/UAG (Autonomous University of Guadalajara)

UAG offers more than 20 graduate programs leading to the *especialización*, *maestría*, and *doctorado* degrees. Because of UAG's emphasis on the medical field, many of its graduate programs, particularly the programs of *especialización*, are in that field. However, graduate programs are also offered in administration, architecture, chemistry, economics, education, law, and linguistics. The Area de Estudios de Post-Grado y Educación, Intercambio Universitario (Area of Graduate Study and University Educational Exchange) has authority over the various faculties, institutes, and schools which offer graduate study. (See Chapter IV for a description of the various divisions of UAG.) Even so, the organization and structure of individual programs of study vary from division to division.

UAG is a private institution whose programs of study are incorporated into the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico). Although the influence of UNAM is apparent, not all of UAG's programs are identical to those of UNAM. In fact, UAG offers a few programs that are not even offered at the UNAM. In some divisions of UAG, the academic year is divided into semesters, January to June and August to December. Others employ a system of *cuatrimestres*, from September to December, January to April, and May to August. In many divisions a system of credits is used in which each course is assigned 3 credits. In the Escuela de Medicina (School of Medicine), the system of credits follows the ANUIES guidelines on the use of the credit system (2 credits for each semester hour of academic or theoretical coursework; 1 credit for each semester hour of lab or practical coursework).

Admission to one of the *especialización* or *maestría* programs of UAG requires a *licenciatura* in a related field of study. The *especialización* programs in medicine also require a year of rotating residency. Admission to a *doctorado* program requires a *maestría* in a related field of study. Students who have not yet completed all the requirements for the *licenciatura*, i.e., *egresados pasantes*, may be admitted to a *maestría*

16. ANUIES, *Los Estudios de Posgrado en México 1978-79*, p. 854.

program on the condition that the undergraduate degree be completed within a year after beginning the graduate program. Similarly, students who have not completed all the requirements for the *maestría* may be admitted to a *doctorado* program on the condition that the *maestría* be completed within six months.

Programs of *especialización* are offered only in the fields of law and medicine. The *especialización* programs in medicine, offered in a wide variety of disciplines, outnumber all other graduate programs offered by UAG. The *especialización* programs in medicine, many of which closely resemble those of UNAM, range from four to six semesters in duration. A large portion of the curriculum is dedicated to clinical practice. Graduation requires a clinical research project and a final exam based on the content of the courses in the program.

The programs of *especialización* in law, on the other hand, are comprised entirely of courses. Programs of *especialización* are offered in *ciencias penales* (penal science), *derecho constitucional y administrativo* (constitutional and administrative law), *derecho privado* (private law), *derecho social* (social law), and *finanzas públicas* (public finance). Each *especialización* program consists of eight courses (24 credits). Other than completion of the program of study, there are no additional degree requirements.

The UAG *maestría* programs are offered in *administración* (administration), *arquitectura* (architecture), *derecho* (law), *economía* (economics), *educación* (education), *fisiología* (physiology), *lingüística* (linguistics), *medicina del deporte* (sports medicine), and *servicios de salud* (health services). The programs of study are generally two to three years in length and include from 42 to 66 credits. Some of the programs of study are organized around a common core of courses which lead to courses in one of several areas of subspecialization.

For example, the *maestría* in *educación* (education) includes a common core of seven courses (21 credits): basic principles of administration, basic principles of educational counselling and orientation, educational research methodology, history of education, introduction to teaching, philosophy of education, and psychology of education. Upon completion of the common core of courses, students choose seven more courses (21 credits) in one of the following subspecializations: *administración educativa* (educational administration) and *docencia* (education). Six credits are allotted for the research leading to the thesis.

The *maestría* is usually a longer, more research oriented program than the *especialización*. For example, the *maestría* in *derecho* (law) includes all of the courses which constitute one of the programs of *especialización*, as well as the following six courses (18 credits): educational psychology, history of education in Mexico, history of Mexican law, pedagogical theory, socioeconomic problems of Mexico and teaching techniques of law. Six credits are assigned to the research required for the thesis. In addition to the thesis and its evaluation by an academic advisor, graduation requires knowledge of a foreign language.

Only two *doctorado* programs, in *educación* (education) and *química* (chemistry) are offered. The programs of study, which are fairly flexible, require from three to five years to complete. The program in education requires the completion of 15 courses (45 credits) and six credits for the thesis of students who have a *maestría* in education. Students with a *maestría* in other fields of study are also required to complete the common core of seven courses in the UAG *maestría* program in education. (See above.) In addition to the thesis and its defense in an examination, the *doctorado* also requires an *examen global* ("global" examination), which is an examination based on the content of courses in the program which students must pass prior to beginning the thesis.

A descriptive grading system is used. An overall average of B/*bien* (good) is required for graduation.

Universidad La Salle, A.C. (La Salle University)

La Salle University offers five programs of study leading to a *maestría* degree, all of which have been established since 1970. La Salle University is a private university, most of whose programs of study are incorporated by Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico). According to the 1979-80 university catalog, the one *maestría* program in *ingeniería económica y de costos* (economic and cost engineering) is in the process of receiving its incorporation.

Admission to a *maestría* program requires a *licenciatura* in a related field of study and, in some cases, an entrance examination. Although most of the programs are organized on a semester basis, the program in economic and cost engineering is organized into three *cuatrimestres* each year. Most of the programs employ a credit system based on the ANUIES guidelines for the use of the credit system (2 credits for each semester hour of theoretical or academic coursework; 1 credit for each semester hour of laboratory or practical coursework).

The programs of study are similar to and, in some cases, identical to programs offered by UNAM. *Maestría* programs are offered in *administración* (administration), *enseñanza superior* (higher education), *ingeniería económica y de costos* (economic and cost engineering), *planeación y sistemas* (planning and systems), and *restauración de monumentos y sitios* (monument and site restoration). Programs range from one to two years in length and include from 69 to 108 credits. The program in planning and systems, which is designed for students with undergraduate degrees in administration or engineering, includes a *núcleo básico* (common core) of 16 courses and three courses in one of the following areas of specialization: *ciencias de la decisión* (decision science), *finanzas* (finance), *sistemas de información* (information systems), and *sistemas económicos* (economic systems).

Graduation requires a thesis and its defense in an examination, as well as knowledge of a foreign language. Grading is on a scale of 1 to 10. While 7 is the minimum passing grade in individual courses, an average of 8 is required for graduation. (See Grading, earlier in this chapter.)

Graduate Programs of Private Institutions Whose Programs Lack Official Validity

There are innumerable private institutions in Mexico which have not obtained official validity for their programs of study. Many of them tend to be institutions which offer only graduate study, since registration of the degree and receipt of the *cédula* (professional credential) are generally less important at the graduate level. (See discussion of official validity in this chapter.) Thus, the fact that the programs of study have not been incorporated by a public institution or recognized by a federal or state government agency is not necessarily a reflection of the quality of those programs.

Very little information is available on private institutions in Mexico whose graduate programs do not have official validity. Although a program without official validity is not necessarily of poor quality, caution is generally advised when dealing with institutions which have no programs of study with official validity, especially those with certain characteristics. (See Chapter VI, Programs Designed for U.S. and Canadian Students.)

There are at least two institutions of graduate education in Mexico whose programs have not been granted official validity because they are interna-

tional establishments serving students from all over Latin America. Their programs of study are described in the following sections.

Facultad Latinoamericana de Ciencias Sociales/FLACSO (Latin American Faculty of Social Sciences)

FLACSO is an autonomous international organism created at the 1977 Conference on Social Sciences in Latin America by the countries of Latin America and the Caribbean. FLACSO has degree-granting units in both Mexico City and Quito, Ecuador. The Mexico City unit was established in 1976 by written agreement between the government of Mexico and FLACSO.

FLACSO, which offers only graduate study, originally offered *maestría* programs in *ciencia política* (political science) and *sociología* (sociology). Now the basic degree awarded is the *maestría* in *ciencias sociales* (social sciences) with areas of specialization in *estado y clases sociales* (social classes and status), *estudios latinoamericanos* (Latin American studies), *problemas laborales* (labor problems), and *problemas rurales* (rural problems). The study of Latin America is the point of departure and primary objective of all of the programs.

Admission to FLACSO, which is limited to Latin Americans, requires a *licenciatura* and three letters of recommendation. The institution's total enrollment in 1979-80 was 54. All of FLACSO's professors are employed on a full-time basis and have at least a *maestría* degree. The academic year is divided into two periods, September to December and January to August.

One area of specialization in Latin American studies is devoted to the intensive study of Latin American problems. The other three areas of concentration also include a group of courses which focus on Latin America as well as courses in a specific area of concentration. Of the approximately 25 courses which constitute the *maestría* program, at least 20 are common to all four areas of concentration. In each academic period, there is one course which concentrates on one of the following areas of Latin America: the Andes, Brazil and the River Plate, the Caribbean, Central America, and Mexico. Other courses common to all the areas of specialization include directed readings in classical and Latin American social sciences, the economic development of Latin America, elements of general social history, methodology, problems related to the theory of the state, social accountability, the theory of social structure, and topics in Latin American social history. The second year of the programs includes fewer courses to allow time for the research necessary for the thesis which is required to graduate.

Grading is based on a 4-point scale as follows: 4 = *excelente* (excellent); 3 = *bueno* (good); 2 = *aprobado* (passing); 1 = *insuficiente* (failing); 0 = *no presentó* (incomplete).

Instituto Latinoamericano de la Comunicación Educativa/ILCE (Latin American Institute of Educational Communication)

ILCE was created by the 1954 general assembly of the United Nations Educational, Scientific and Cultural Organization/UNESCO as the Instituto Latinoamericano de Cinematografía Educativa (Latin American Institute of Educational Cinematography). In 1969 the institute's name was changed to the Latin American Institute of Educational Communication. A 1978 *convenio de cooperación* (cooperation agreement), signed by countries in Latin America and the Caribbean, made the ILCE an autonomous international institution.

The purpose of the ILCE is to educate technicians and professionals from all over

Latin America in educational technology. A *maestría* in *tecnología educativa* (educational technology) is offered, as well as short *talleres de capacitación* (training workshops) in such topics as *composición y diseño gráfico* (composition and graphic design), *elaboración de materiales audiovisuales* (the development of audiovisual materials), and *televisión educativa* (educational television).

Admission to any ILCE program is limited to students proposed by one of the countries which signed the 1978 cooperation agreement. Admission to the *maestría* program requires graduation from a higher normal—teacher training—school or a *licenciatura* for Mexican applicants and the equivalent for students from other Latin American countries. The training workshops are open to students of any educational level. Students who do not have the educational background necessary to enter the *maestría* program may be admitted to take some of the modules (see next paragraph) which constitute the *maestría* program; however, they are not eligible to earn the *maestría*.

The *maestría* program is organized into four *módulos* (modules) and an introductory course. The *curso de introducción a la tecnología educativa* (introductory course to educational technology) consists of one month of fulltime study of the technical language and basic concepts of educational technology. The completion of the introductory course is required before a student may begin the first module.

Each module involves four months of fulltime study of a particular aspect of educational technology, from April to August 1 or from October 1 to February 1. The first three modules in *administración de la tecnología educativa* (administration of educational technology), *comunicación educativa y cultural* (educational and cultural communication), and *sistematización de la enseñanza* (systematization of education), involve 5 hours of study each day.

During the first three modules, students begin the development of a research project. The final module, which involves three hours of study each day, is devoted to *investigación y desarrollo de la tecnología educativa* (research and development in educational technology). In this module, the research begun in the first three modules culminates in the development of a model for the application of educational technology. The results of this research constitute the thesis required to graduate.

Chapter Six

Guidelines and Placement Recommendations

Special Considerations

Validity and Programs Designed for U.S. and Canadian Students

An understanding of the Mexican concept of official validity is essential to the effective use of this volume. Validity provides the basis for the organization of Chapters III, IV, and V. It also helps to clarify some of the unusual characteristics of the Mexican system of education such as the incorporation of programs of studies and the registration of graduates with the Secretaría de Educación Pública/SEP (Ministry of Education). (For a discussion of incorporation and registration, see the introductory section of Chapter IV.) Furthermore, if used carefully, the concept of official validity may be of assistance in dealing with Mexican institutions of unknown standards whose programs are designed specifically to serve non-Spanish speaking students from the United States and Canada in fields other than the teaching of Spanish. When these programs have neither United States accreditation nor official Mexican validity, the treatment of them by U.S. admissions officers requires special attention and caution.

The absence of validity alone should not be interpreted as indicating a lack of academic quality in a Mexican institution. It should be remembered, however, that while a Mexican institution of higher education is free to offer any program or degree it wishes, an institution that issues transcripts only in English, uses non-Mexican designations for its degrees (e.g., B.A., M.F.A., Ph.D. and the like), and has neither U.S. accreditation nor Mexican validity is operating with few controls and may have established inappropriate admission, study, and graduation standards.

On occasion, such institutions may actually attempt to disguise their programs' lack of official validity by referring to membership in a variety of organizations or to some sort of governmental authority. For example, the promotional brochure of one medical school whose programs do not have official validity refers to "authorization by the Mexican government to accept foreign students." Similarly, some institutions appear to misuse the incorporation (and subsequent validity) of some of their individual programs by implying that the entire institution is itself incorporated, thus suggesting that comprehensive validity for the entire institution has been received.

In summary, numerous private institutions in Mexico may have legitimate reasons for lacking official validity for some or all of their programs. In other cases, however, validity is absent because the program in question operates outside the regular system of Mexican education. The admissions officer should request as much information as possible about such an institution, its programs of study and its admission and graduation requirements.

Mexican Degrees and Qualifications

Many certificates, qualifications, and degrees used in Mexico at various levels refer to the holder of the certificate, qualification, or degree—as in *enfermero* (nurse), *maestro* (teacher), *profesor* (teacher), *licenciado* (holder of a *licenciatura)*—rather than simply to the field of study followed. In Spanish, these designations reflect the sex of the holder of the award. Designations for female degree-holders generally end in the letter "a," as in *enfermera, maestra, profesora,* and *licenciada*. For convenience, the masculine terms have been used consistently in this volume, with the exception of *educadora* (preschool teacher) and *secretaria* (secretary).

Constancias* and *Certificados. There are two broad categories of documents issued by educational institutions in Mexico: *constancias* and *certificados*. A *constancia* is a temporary document, which may be issued for a variety of purposes. A *certificado* is a final legal document, usually a transcript or a degree.

All institutions may issue their own *constancias*. They may even be issued by individual faculties or other divisions of institutions. A *constancia* may serve to list the courses and grades a student has completed at an institution or it may specify a student's status, e.g., a *carta de pasante*. Usually a typed document which resembles a letter, the term *constancia* may be used as the document title. In other cases, it may begin *"se hace constar"* (the following proves) or *"a quien corresponda"* (to whom it may concern). (See sample document 15 in Appendix D.)

The most common *certificados* are the *certificados de estudios* (transcripts). The word *certificado* may or may not appear on the document itself. The document often is perforated on one side and is sometimes prepared by computer. (See sample document 16.) Unlike *constancias*, the issuance of *certificados* is restricted by the system of official validity to certain institutions, authorities or agencies. The *certificados* of many private and some public institutions are issued by a government agency or another institution. (See Categories of Public and Private Institutions, Chapter IV.) Both the *constancia* and the *certificado* are official documents, but admissions officers should request the *certificado* in order to resolve questions about a particular program's official validity.

Completion Documents. Both *constancias* and *certificados* may indicate completion of a program of study. Phrases used to indicate that the program has been completed usually involve the terms *integramente* (integrally or entirely) or *totalmente* (totally). (See sample document 17 in Appendix D.) Other forms of the verb *integrar* (to make up a whole) may also be used, as

in ". . . *cursó las asignaturas que integran el plan de estudios. . . .*" (the student took the courses that comprise the program). (See sample document 16.) Another phrase which may be encountered is "*acreditó las materias del plan de estudios. . .*" (the student passed the courses of the program). Finally, the document may simply be designated as *completo* (complete).

When the program of study is not complete, the word *parcialmente* (partially) may replace the terms *integramente* or *totalmente* on the document. The phrase *forman parte de* (comprise part of) indicates that the plan of study has been only partially completed. (See sample document 18 in Appendix D.) The document may simply be designated as *incompleto* (incomplete). If a specific aspect of the study plan has not yet been completed, this may also be specified on the document. In sample document 19, all of the study plan but the foreign language translation has been completed.

Completion of most upper secondary level programs, such as the *bachillerato* program, is indicated directly on the *constancia* or *certificado de estudios*. There is no need to request additional documentation. (See Certificates and Qualifications, Chapter III.) However, graduation from some vocational upper secondary programs and all *licenciatura* programs is signified by the *constancia* or *certificado de estudios* in conjunction with the *título* (qualification or degree). (See Chapter III, Certificates and Qualifications, and Chapter IV, Degrees.)

English Translations. Because of some misleading similarities between educational terms used in the United States and in Mexico, it is extremely hazardous to rely only on an English translation of a Mexican educational document. Even though many institutions in Mexico issue official documents in English, it is recommended that all translations be used in conjunction with official *constancias* or *certificados de estudios* written in Spanish.

Determining Educational Levels

To determine whether a given program of study is offered at the lower secondary, upper secondary, undergraduate or graduate level is not easy. Many fields of study are offered at all these levels, and many of the same designations are used for qualifications and degrees awarded at different levels. To add to the confusion, institutions of higher education themselves offer programs of study at the lower secondary and upper secondary levels, as well as at the undergraduate and graduate levels.

The designations, degrees and qualifications associated with each level of Mexican education are described in the preceding chapters. These designations may not prove accurate in every case, however, since institutions are largely free to devise their own designations for their programs of study and the level at which they are offered. In cases of doubt, it may be helpful to request the previous academic records. Although this information may not always be conclusive since a student might complete two programs of study offered at the same level, in most cases the previous academic records

can be very useful. For example, in determining whether a given teacher training program is offered at the upper secondary or undergraduate level, it is helpful to know that *secundaria* (a lower secondary program) was completed immediately prior to the teacher training program.

There are four areas of education in Mexico in which it is particularly difficult to determine the level at which programs are offered: fine arts education, seminary education, teacher education, and technical or vocational education.

LEVELS OF FINE ARTS EDUCATION

Some programs in fine arts are clearly offered at only one educational level. Such programs include the lower secondary level artistic *secundaria* programs (see Chapter II) and the *bachillerato de arte* (art *bachillerato)* programs (see Chapter III). Also included are the *licenciatura* programs which require for entry the completion of an upper secondary curriculum considered preparatory for higher education. Such *licenciatura* programs are offered by some of the institutions dependent on the Instituto Nacional de Bellas Artes/INBA (National Institute of Fine Arts) and the Secretaría de Educación Pública/ SEP (Ministry of Education), such as the Escuela Nacional de Pintura y Escultura (National School of Painting and Sculpture). The Escuela Nacional de Artes Plásticas (National School of Plastic Arts) and the Escuela Nacional de Música (National School of Music) of the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico) also offer 8-semester *licenciatura* programs in various artistic and music fields. Both schools require for entry the completion of an upper secondary program considered preparatory for higher education.

Other programs of study, however, are more difficult to place because they encompass several educational levels. These programs may begin even prior to the completion of primary school and continue through the upper secondary or undergraduate levels. In some cases—e.g., in the INBA-SEP's Escuela Superior de Música (Higher School of Music)—no particular level of education is required for entry to the programs of study. (This school is described in Chapter IV.) Even where certain minimum educational requirements do exist, exceptions may be made for talented applicants. These exceptions are more frequent in the fields of dance and music. The Conservatorio Nacional de Música (National Conservatory of Music), the Escuela Nacional de Danza Clásica (National School of Classical Dance) and the Escuela Nacional de Danza Folklórica (National School of Folkloric Dance), all of which are dependent on the INBA and the SEP, encourage talented students to begin their artistic endeavors as young as possible. Occasionally, the program leads to a vocational qualification or degree only if other education such as *secundaria* or *preparatoria* is completed concurrently with the artistic program.

Because the admissions requirements for programs in fine arts are so flexible, and because the programs themselves are available at many different

levels, these programs must be carefully analyzed on an individual basis. In terms of curriculum, studies that correspond to a *licenciatura* program tend to be highly specialized, while programs at the upper secondary level which prepare for higher education will usually include a percentage of general academic courses. Especially for the seven- to ten-year programs, it may be necessary to request all educational credentials available, including those of primary school.

LEVELS OF SEMINARY EDUCATION

Due to constitutional restrictions on religious education, seminary education is not part of the official Mexican educational system. For this reason, it has been impossible to secure information on education offered in Mexican seminaries. Furthermore, because they are not restricted by the system of official validity, seminaries may not use the same designations for levels of study and programs described in this volume. Since the previous level of education required to enter seminaries is unknown and may in fact vary, admissions officers are advised to request the complete educational records of seminary graduates, including those of primary school.

LEVELS OF TEACHER EDUCATION

Teacher education can be confusing since some of the same designations are used for certificates, qualifications, and degrees at the upper secondary, undergraduate, and graduate levels. Some of the designations also have more than one meaning. The 1973 Federal Education Law, which established the *licenciatura* as the undergraduate degree awarded by tertiary teacher training institutions, has had enormous impact on teacher education.

Prior to 1973, the teaching qualifications *profesor* and *maestro* (teacher) were awarded at both the upper secondary and undergraduate levels. The types of teachers prepared, the designations for the cycle, the designations for the institution or the division of the institution which offers the program, and the length of the program all provide clues as to the level at which the qualification or degree is awarded. Because the teaching qualification awarded at the upper secondary level was considered the first professional teaching qualification, the post-upper secondary or undergraduate teaching program—i.e., the program leading to the second teaching qualification—was considered by some to be comparable to a graduate program in education rather than to an undergraduate program. Thus, the term *maestro* (teacher) awarded at the undergraduate level acquired the same significance as the *maestría* (master's). Perhaps because of this, the few tertiary-level teacher training institutions which offered graduate programs called them "*doctorado*" programs, rather than *maestría* programs, even though these were the first graduate programs beyond the undergraduate *profesor* or *maestro* program.

As a result of the 1973 law, the undergraduate curriculum was reorganized

in 1976, establishing the *licenciatura* as the undergraduate degree awarded by most tertiary teacher training institutions. Some institutions have subsequently replaced their *doctorado* programs with a graduate-level *maestría* program and other institutions have established both *maestría* and *doctorado* programs.

Despite the influence of the SEP, which tends to standardize teacher training in Mexico, not all institutions have adopted the changes in programs of study and qualifications or degrees awarded. Thus, the *profesor* qualification or degree may still be encountered at both the upper secondary and undergraduate levels, while the *maestro* or *maestría* may be encountered at the upper secondary, undergraduate, and graduate levels.

LEVELS OF TECHNICAL OR VOCATIONAL EDUCATION

Evaluating short-term technical or vocational programs of study offered at the lower secondary, upper secondary, and undergraduate levels is often difficult because programs at all three levels may be offered by an institution of higher education; many fields of study are offered at more than one level. Furthermore, many of the same designations for qualifications or degrees are used. Since it has been impossible to include in this volume every vocational qualification awarded, special attention is warranted when dealing with certain fields of study and certain qualifications.

Commercial programs of study, leading to such qualifications as *secretaria bilingüe* (bilingual secretary) and *contador privado* (bookkeeper), are offered at both the lower secondary and upper secondary levels. Thus, when dealing with commercial programs of study, close attention to the designations for the lower secondary and upper secondary levels is necessary (see Commercial Training, Chapter II, and Programs of Study, Chapter III). Programs of study at both levels are generally designed to lead to immediate employment. To determine whether a given upper secondary level program provides adequate preparation for higher education in the United States, admissions officers should evaluate it in accordance with the methodology suggested later in this chapter.

There are several vocational qualifications or intermediate degrees awarded at both the upper secondary and undergraduate levels, including *auxiliar* (assistant), *profesional técnico* (technical professional), *técnico* (technician), and *técnico profesional* (professional technician). Since programs of study leading to these qualifications at both levels may be offered by institutions of higher education, particular attention should be paid to the designations for the level (see Chapter III, Programs of Study, and Certificates and Qualifications; and Chapter IV, Undergraduate Programs of Study), and to an applicant's previous educational record.

Vocational programs at the upper secondary level can be analyzed to determine whether enough general academic courses are included in the curriculum to provide adequate preparation for higher education in the United States (see discussion of credential evaluation later in this chapter).

Two types of programs at the undergraduate level lead to intermediate degrees. Such programs generally are referred to as *salidas laterales*, and may consist of the first one-to-three years of a *licenciatura* program (see ITA, Chapter IV). Or they may be short-term programs (usually called *carreras cortas)* that are highly specialized in a given field of study and may vary in length from five months to two years. (For examples of this type of program, see Escuela de Salud Pública, Chapter IV.) Although transfer credit for both types of programs should be determined through a course-by-course analysis, the programs which correspond to the first one-to-three years of a *licenciatura* program would probably include more transferable courses than the more specialized programs, which may in some cases warrant no transfer credit at all.

Finally, certain fields of study which were once only available at the upper secondary level are now also offered as full *licenciatura* programs. Notable examples of this are the fields of *enfermería* (nursing) and *trabajo social* (social work). Some institutions offer upper secondary and undergraduate level programs in the same fields of study. Thus, close attention to the designations for the level and for the qualification or degree is warranted. In the fields of nursing and social work, the upper secondary qualification is actually the designation for the holder of the qualification, that is, *enfermero* (nurse) and *trabajador social* (social worker), while the undergraduate degree is the *licenciatura* in nursing or social work.

Although offered in the same field of study, programs offered at two different levels are, of course, not equivalent. The upper secondary programs can be analyzed in terms of the methodology suggested for vocational programs in this chapter (see next section), while the *licenciatura* programs are equivalent to other *licenciatura* programs.

Evaluation of Vocational Upper Secondary Curriculums

The characteristics of vocational upper secondary programs are described in Chapter III to assist the outside observer in distinguishing between programs designed to lead to higher education and programs designed to lead to direct employment. This distinction is important since the *técnico* programs that prepare students for direct employment generally include fewer general academic courses and more courses in the area of vocational specialization than most *bachillerato técnico* or *preparatoria técnica* programs. (See Chapter III, Vocational Upper Secondary Programs.) Given the wide variety in duration and curriculum of vocational programs, it is sometimes necessary to analyze a given program in terms of total number of courses or semester hours which comprise the program and then determine the percentage of the program dedicated to general academic and vocational courses.

Vocational upper secondary programs vary in duration from one to four years. It is unlikely that a one- or two-year program with even a small percentage of vocational courses would include enough general academic courses to be considered adequate preparation for higher education. However, the duration of a program in terms of semesters or years is not always consistent with the number of semester hours or courses which comprise the program;

that is, longer programs do not always include more total semester hours or more courses than shorter programs. At the same time, programs which are not designed to lead to higher education sometimes include as many general academic courses as other programs which are designed to lead to higher education.

For example, in Table 38, three upper secondary programs in electricity are compared. The program offered by the Universidad Autónoma de Nuevo León/UANL (Autonomous University of Nuevo León) is designed to lead

Table 38

Comparison of Upper Secondary Programs in *Electricidad* (Electricity), UANL, UG, ITESM

	UANL,* *Bachillerato/Técnico Electricista* (3-yr program)	UG,* *Técnico Electricista* (4-yr program)	ITESM,* *Técnico Electricista* (4-yr program)
		Semester Hours	
Administration & Organization	3	7	4
Biology	11	6	–
Chemistry with Lab	9	14	–
Community Development	–	20	–
D awing†	12	14	4
Economics	3	6	–
Electricity & Electronics†	22	72	82
English	9	–	–
Ethics	3	3	–
Etymology	–	4	–
History	3	9	4
Industrial Activities†	–	35	–
Industrial & Materials Chemistry	–	–	6
Labor Rights & Legislation	3	2	–
Logic	–	3	–
Mathematics	24	20	18
Methodology	3	3	–
Philosophy	3	6	4
Physics with Lab	9	19	10
Psychology	–	6	–
Safety & Hygiene	3	2	–
Social & Economic Problems of Mexico/World	9	3	–
Sociology	–	3	–
Spanish	11	12	8

(continued)

Spanish Literature	–	3	–
Vocational Orientation	–	4	–
Workshop†	44	34	20
World Literature	–	3	–
Total Semester Hours	184	313	160
Electricity Courses	42% (77)	50% (156)	66% (105)
Basic Academic Courses	51% (93)	38% (118)	31% (49)

*UANL/Universidad Autónoma de Nuevo León (Autonomous University of Nuevo León); UG/Universidad de Guadalajara; ITESM/Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Institute of Technology and Higher Studies).

†Electricity courses.

Sources: *Carreras que imparte la U.A.N.L. y Planes de Estudio*, Universidad Autónoma de Nuevo León, Departamento Escolar y de Archivo (Monterrey: Imprenta Universitaria, 1980); *Universidad de Guadalajara, Guía Académica 1979*, Universidad de Guadalajara (Departamento Editorial, December 1979); Curriculums from ITESM. (mimeographed)

to higher education, while the two programs offered by the Universidad de Guadalajara/UG (University of Guadalajara) and the Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM (Monterrey Institute of Technology and Higher Studies) are not. Even though the programs of both UG and ITESM are four years in length, the total number of semester hours spent in class varies considerably—from 160 in ITESM to 313 in UG. Although approximately one-third of each of these two programs is devoted to general academic subjects, the actual number of semester hours spent in academic courses is much higher in the UG program than in the ITESM programs. Thus, the UG program, which is not designed to lead to higher education, actually devotes more semester hours to general academic courses than does the UANL program which is designed to lead to higher education.

Table 39

Comparison of Six-Semester Upper Secondary Programs in *Enfermería* (Nursing), UANL, UG, ITESM

	UANL,* *Preparatoria Técnico-Médica* in *Enfermería*	UG,* *Técnico Profesional Enfermero*	ITESM,* *Enfermería* and *Preparatoria Ciencias Biológicas*
	Semester Hours		
Art Appreciation	–	1	3
Biochemistry	4	–	–
Biology	6	–	4
Chemistry	–	–	5

Clinical Anatomy	–	7	–
Community Development	3	–	3
English	9	2 (optional)	20
Ethics	3	1	3
Family Planning	–	1	–
Genetics	–	1	–
History	3	3 (optional)	10
Human Relations	–	2	–
Laboratories & Practice	30	40	20
Learning Methodology	–	1	–
Legislation	–	3	–
Mathematics	15	2 (optional)	10
Microbiology	5	7	–
Nursing	50	70	116
Nutrition	–	7	3
Organic Chemistry	3	–	–
Pathology	5	13	–
Pharmacology	5	11	–
Philosophy	3	–	9
Physical Chemistry	12	–	–
Physics	–	–	5
Physiology, Biochemistry, Biophysics	10	8	–
Political Texts	–	–	6
Psychology	9	6	–
Public Health	7	18	8
Science Methodology	3	–	–
Social & Economic Problems of Mexico	3	–	–
Socioanthropology	–	1	–
Spanish	16	3 (optional)	18
Other	–	9	–
Total Semester Hours	204	217	243
Basic Academic Courses	51%	22%	38%
Nursing Courses	49%	78%	62%

*UANL/Universidad Autónoma de Nuevo León (Autonomous University of Nuevo León); UG/Universidad de Guadalajara; ITESM/Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Institute of Technology and Higher Studies).

SOURCES: *Carreras que imparte la U.A.N.L. y Planes de Estudios*, Universidad Autónoma de Nuevo León Departamento Escolar y de Archivo (Monterrey: Imprenta Universitaria, 1980); *Universidad de Guadalajara, Guía Académica 1979*, Universidad de Guadalajara (Departamento Editorial, December 1979); Curriculums from ITESM. (mimeographed)

In Table 39, three upper secondary programs in nursing are compared. In this case, the programs of both UANL and ITESM are designed to lead to higher education, while the UG program is not. All three programs are six semesters in duration. The programs of study of both ITESM and UG include a smaller percentage of general academic courses than the program of UANL. However, since the ITESM program includes more total semester hours than either of the other two programs, the actual number of semester hours devoted to general academic courses in the program of ITESM approaches that of UANL.

Comparison of *Licenciatura* Programs

Licenciatura programs of study range in duration from two and one-half to six years. Table 40 compares the programs of study offered by a cross-section of institutions of higher education in six different fields. Whenever possible, they are compared in terms of number of semesters, courses, semester hours, and credits (when the ANUIES credit system is used). These programs range from five to ten semesters in duration, and include from 29 to 82 courses, from 137 to 299 semester hours, and from 320 to 511 credits. (For a discussion of the ANUIES guidelines on credit, see Undergraduate Programs of Study, Chapter IV.)

Despite the wide variance in the factors compared, each of these programs is designated by the institution that offers it as a *licenciatura* program, thus permitting access to graduate education in Mexican institutions. While the admissions officer in the United States will want to consider with extreme care a *licenciatura* program of only two and one-half years' duration, it is apparent from Table 40 that shorter programs do not necessarily include fewer courses, semester hours, or credits than some of the longer programs.

Table 40

Comparison of *Licenciatura* Programs in Terms of Numbers of Semesters, Semester Hours, Courses, and ANUIES Credits*

Institution†	UNAM-CU	IPN	ITAM	ITESM	ITESO	ITR	UACJ	UANL	UG	Univ. La Salle
Architecture										
Semesters	10	–	–	9	8	–	9	10	10	10
Courses	60	–	–	54	61	–	59	63	54	82
Semester Hours	–	–	–	217	282	–	263.5	262	299	–
Credits (ANUIES)	450	–	–	–	–	–	511	–	–	–
Civil Engineering										
Semesters	9	10	–	8	8	8	9	10	–	–
Courses	53	63	–	52	48	47	61	61	–	–
Semester Hours	–	250.5	–	154	198	218	260	267	–	–
Credits (ANUIES)	394	–	–	–	332	380	502	–	–	–

Economics										
Semesters	–	9	8	8	–	–	8	–	10	–
Courses	–	48	47	52	–	–	50	–	59	–
Semester Hours	–	231	–	156	–	–	190	–	221	–
Credits (ANUIES)	–	–	360	400	–	–	380	–	–	–
Law										
Semesters	10	–	–	–	–	–	9	10	10	9
Courses	39	–	–	–	–	–	46	36	36	37
Semester Hours	–	–	–	–	–	–	215	187	175	–
Credits (ANUIES)	380	–	–	–	–	–	422	–	–	–
Letters										
Semesters	8	–	–	8	–	–	–	–	9	–
Courses	52	–	–	48	–	–	–	–	51	–
Semester Hours	–	–	–	144	–	–	–	–	150	–
Credits (ANUIES)	320	–	–	384	–	–	–	–	–	–
Topographical Engineering										
Semesters	–	6	–	–	–	–	–	–	5	–
Courses	–	41	–	–	–	–	–	–	29	–
Semester Hours	–	190.5	–	–	–	–	–	–	137	–
Credits (ANUIES)	–	–	–	–	–	–	–	–	–	–

*This refers to the ANUIES guidelines on credit.

Sources: Catalogs of universities listed below.

†UNAM-CU—Universidad Nacional Autónoma de México-Ciudad Universitaria (National Autonomous University of Mexico-University City; IPN—Instituto Politécnico Nacional (National Polytechnic Institute); ITAM—Instituto Tecnológico Autónoma de México (Autonomous Technological Institute of Mexico); ITESM—Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Institute of Technology and Higher Education); ITESO—Instituto Tecnológico y de Estudios Superiores de Occidente (Institute of Technology and Higher Studies of the West); ITR—Instituto Tecnológico Regional (Regional Technological Institute); UACJ—Universidad Autónoma de Ciudad Juárez (Autonomous University of Ciudad Juárez); UANL—Universidad Autónoma de Nuevo León (Autonomous University of Nuevo León); UG—Universidad de Guadalajara (University of Guadalajara).

It is true that La Salle University's 10-semester program in architecture includes more courses (82) than any other program included in Table 40, while UG's 5-semester program in topographical engineering includes the fewest (29). There are, however, other programs of 8- to 10-semesters' duration which include only a few more courses or semester hours than the UG program in topographical engineering. For example, two of the 10-semester programs in law include 36 courses, only 7 more than the program in topographical engineering. Similarly, the 8-semester program of study in letters offered by ITESM includes 144 semester hours, only 7 more than are included in the topographical engineering program at UG.

Another comparison involves the 6-semester program in topographical engineering offered by the Instituto Politécnico Nacional/IPN (National Polytechnic Institute). In this case, the program actually includes more

courses than four of the 9- to 10-semester programs in law and more semester hours than certain programs in civil engineering, economics, law, and letters. Finally, the 10-semester program in law offered by UANL includes fewer courses and fewer semester hours than many of the 8-semester programs offered in the fields of civil engineering and economics.

Egresado Pasante Status

Comparing *licenciatura* programs across institutional lines is complicated by the *egresado pasante* issue. In addition to the courses included in the program of study, a period of social service, a thesis, and a professional examination have traditionally been required of students before they can be awarded a *licenciatura* degree in Mexico. A student who has completed the coursework, but has failed to complete the other requirements, is generally known as an *egresado pasante*. In fact, only a relatively small percentage of students ever complete all the requirements to earn the degree. (See Degrees and Degree Requirements, Chapter IV.)

For this reason, many institutions have established alternatives to some of these requirements or have incorporated the work necessary to fulfill the requirements into the coursework component of the curriculum. For example, the preparation of the thesis has traditionally been the Mexican student's first opportunity for independent research. Some institutions have virtually eliminated the thesis by incorporating more independent study and research into the programs of study.

To establish something less than actual completion of the *licenciatura* degree—that is, *egresado pasante* status—as equivalent to the bachelor's degree in the United States would be to ignore the differences between the traditional degree programs and those which have made substitutions for the traditional degree requirements. The wide variety of degree requirements currently in use by institutions of higher education coupled with the inconsistencies in the length of *licenciatura* programs make it virtually impossible to define a certain point in the degree program when the *licenciatura* becomes comparable to the bachelor's degree.

In Mexico, however, the distinction between the *egresado pasante* and the *licenciado* is still more legal than academic. To facilitate completion of the degree and to encourage graduate study, more and more Mexican institutions accept *egresados pasantes* on the condition that the *licenciatura* be completed within certain time limits. Some Mexican institutions have even established, as an alternative to the thesis, the completion of 50% of a graduate program within the institution or at another institution. Thus, it is quite common for Mexican students to begin applying to graduate programs prior to completion of the *licenciatura* degree. Such students may simply lack the formal award of the degree or they may have decided not to complete it at all. Students who expect to receive the degree should be able to obtain a *constancia* attesting to their status.

The admissions officer who decides to admit a student who cannot present proof that the *licenciatura* has been completed or will be completed

shortly is faced with three options: graduate admission, undergraduate admission, or graduate admission with deficiencies. While U.S. admissions officers have followed all three courses of action in the past, none is entirely satisfactory. The admissions officer may determine that certain *egresados pasantes* are prepared for graduate study; however, to systematically admit *egresados pasantes* directly to graduate programs would be to establish the status of the *egresado pasante* as equivalent to that of the U.S. bachelor's degree, thus ignoring the differences among *licenciatura* programs discussed previously.

On the other hand, undergraduate admission is not entirely appropriate either because evaluation of such students' coursework would probably yield as many semester hours as comprise most U.S. bachelor's degree programs. To require these students to complete the freshman and sophomore courses such as English, history, and government, which are required for a U.S. bachelor's degree, would seem pointless.

Even the final alternative, graduate admission with deficiencies, is not without pitfalls. This option is particularly appropriate if the student is changing fields of study, since deficiency courses may be assigned in the proposed field of study. However, if the student remains in the same field of study, deficiency courses will be more difficult to assign because of the high degree of specialization of most *licenciatura* programs. It is clear that the *egresado pasante* should be carefully considered on an individual basis in light of institutional experience.

Transfer of Credit from Mexican Institutions

Although available information on the number of semester hours and the number of credits which comprise Mexican programs of study has been used extensively in this volume, such information is not always readily available to U.S. admissions officers. Most *constancias* and even some *certificados de estudios* simply list the courses and grades, often without any indication as to the year in which each course was taken. Even when credits or units are specified on the transcript, the system by which the credits are awarded may not be apparent.

In recent years, Mexican institutions have begun publishing more information about their programs of study. In some cases, a *catálogo* (catalog) or a *guía de carreras* (guide to programs of study) is available which often contains study plans or course descriptions. Applicants themselves should be able to obtain a *plan de estudios* (study plan) of their degree program, and possibly course descriptions also.

In using the available information to determine transfer credit, it must be remembered that undergraduate programs in Mexico are usually comprised of more courses and more total semester hours than similar programs in the United States. Assuming that no more than approximately 30 semester hours of transfer credit should be awarded in the United States for each

academic year completed in Mexico, the value of each course included in the program of study should be adjusted so that the total possible semester hours of transfer credit which might be awarded for each academic year does not exceed 30. Within this limitation, each course would then be considered on an individual basis. The fact that transfer credit is not awarded for certain courses does not increase the possible transfer credit to be awarded for other courses.

Mexican Scholarship Programs

Consejo Nacional de Ciencia y Tecnología/CONACYT (National Council for Science and Technology)

Founded in 1970, CONACYT is an independent government agency which reports directly to the President of Mexico. In addition to various activities in support of scientific and technological development in Mexico, CONACYT is responsible for granting scholarships for study in Mexico and in other countries. Between January 1977 and July 1978, CONACYT granted over 3,266 scholarships, or over two-thirds of all the scholarships granted in Mexico during this period. Thirty percent of the scholarships were awarded for study in an engineering field, 23% in the social sciences. More than two-thirds were for graduate study; slightly less than half were for study outside Mexico.[1]

Until recently, CONACYT has emphasized graduate study; however, it is expected that more scholarships for short-term programs in technical fields will be awarded in the future. In 1980, 21% of the scholarships went to skilled workers seeking technical training.[2] In some cases, scholarships are awarded to students who have not yet been admitted to a program of study. More often than not, however, students are required to gain admission to an institution of higher education prior to receiving a scholarship.

The CONACYT program emphasizes certain fields of study judged to be of high priority to the nation and including the basic sciences, agronomy, fishing, nutrition and health, ecology, and various branches of engineering.[3] Although the previous grade average of applicants is taken into consideration in granting scholarships, no minimum grade average requirement has been established. This is due, in part, to the fact that grading severity varies greatly (see Grading, Chapter IV). It is due also to the fact that students in high priority fields of study may be accepted with somewhat lower grade averages than students in other fields. Scholarships are granted to students with the status of *egresado pasante* on the condition that the *licenciatura* be awarded within one semester of the beginning of graduate study.

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1. *Mexico's Program for Science and Technology, 1978-82*, Consejo Nacional de Ciencia y Tecnología (México, D.F.: Imprenta Madero, 1979), p. 17.

2. "CONACYT: 26000 Study Grants," *R and D Mexico*, National Council of Science and Technology-CONACYT, vol. 2, no. 1 (Oct 1981), pp. 47-48.

3. *Ibid.*, pp. 47-48.

Other Scholarships

Scholarships are also awarded by the Banco de México (Bank of Mexico), the Asociación Nacional de Universidades e Institutos de Enseñanza Superior/ANUIES (National Association of Universities and Institutions of Higher Education), the Universidad Nacional Autónoma de México/UNAM (National Autonomous University of Mexico), other institutions of higher education, and the Secretaría de Educación Pública/SEP (Ministry of Education). The SEP's system of Institutos Tecnológicos Regionales/ITR (Regional Technological Institutes) recently has undertaken an ambitious program of faculty development which primarily involves the granting of scholarships for graduate study in the United States.

The Role of the National Council on the Evaluation of Foreign Educational Credentials

The placement recommendations that follow have been approved by the National Council on the Evaluation of Foreign Educational Credentials. In order that these recommendations may be of maximum use to admissions officers, the following information on the development of the terminology used in stating the recommendations, along with instructions for their use, is offered by the Council and the World Education Series Committee.

The recommendations deal with all levels of formal education in roughly chronological order up through the highest degree conferred. Recommendations, as developed through discussion and consensus in the Council, are not directives. Rather, they are general guidelines to help admissions officers determine the admissibility and appropriate level of placement of students from the country under study.

The recommendations should be applied flexibly rather than literally. Before applying the recommendations, admissions officers should read the supporting pages in the text and take into account their own institutional policies and practices. For example, a recommendation may be stated as follows: ". . . may be considered for up to 30 semester hours of transfer credit. . ." The implication is that the U.S. institution may consider giving less than or as much as one year of transfer credit, the decision to be based on various factors—the currentness of the applicant's transfer study, applicability of the study to the U.S. curriculum, quality of grades, and the receiving institution's own policies regarding transfer credit. Similarly, the recommendation ". . . may be considered for freshman admission" indicates possible eligibility only; it is not a recommendation that the candidate be admitted. Although consideration for admission at the same level may be recommended for holders of two different kinds of diplomas, use of identical phrasing in the recommendation does not mean that the two diplomas are identical in nature, quality, or in the quantity of education they represent.

In most cases, the Council will not have attempted to make judgments about the quality of individual schools or types of educational programs within the system under study. Quality clues are provided by the author and must be inferred from a careful reading of the text.

Certain phrases used repeatedly in the recommendations have acquired, within Council usage, specific meanings. For example, "through a course-by-course analysis" means that in dealing with transfer credit, each course taken at the foreign institution is to be judged on an individual basis for its transferability to the receiving institution. Another phrase "where technical training is considered appropriate preparation" suggests that the curriculum followed by the candidate is specialized, and this wording is often a hint that within the foreign system the candidate's educational placement options are limited to certain curriculums. However, while the Council is aware of the educational policies of the country under study, the Council's policies are not necessarily set in conformity with that country's policies. Rather, the recommendations reflect U.S. philosophy and structure of education.

In voting on individual recommendations, Council decisions are made by simple majority. Although consistency among volumes is sought, some differences in philosophy and practice may occur from volume to volume.

Placement Recommendations

Educational Background of Students from Mexico	Placement Recommendations for U.S. Admissions Officers
A. Secondary Credentials	
1. Completed *secundaria* (represents 9 years of education). (p. 9)	May be considered for placement in grade 10.
2. Completed a vocational upper secondary program (beyond *secundaria)* of less than one year. (p. 12)	May be considered for credit in grade 10 based on a course-by-course analysis.
3. Completed a vocational upper secondary program (beyond *secundaria)* of at least one year but less than three years. (p. 36)	May be placed in high school on a year-by-year basis where the courses completed are considered appropriate preparation for the year in which the student is to be placed.
4. Completed a two- or three-year *preparatoria* or *bachillerato* program. (p. 27)	May be considered for freshman admission.
5. Completed a *vocacional, preparatoria, preparatoria técnica, bachillerato,* or *bachillerato técnico* program with a vocational or teaching specialization. (pp. 36, 55)	
6. Completed any other three- or four-year upper secondary vocational or teacher training program. (pp. 36, 55)	May be considered for freshman admission where the secondary program followed is considered appropriate preparation. (p. 210)
B. Undergraduate Credentials (pp. 73-78)	
NOTE: Students who have completed some coursework for any of the programs listed below may be considered for undergraduate admission with up to a maximum of 30 semester hours of transfer credit for each year, determined through a course-by-course analysis.	
1. Completed an undergraduate *carrera corta* (short major) or *salida lateral* (lateral exit) program and received an "intermediate degree."	May be considered for undergraduate admission with transfer credit determined through a course-by-course analysis.
2. Completed all of the courses in a *licenciatura* program and received the classification of *egresado pasante.*	May be considered for undergraduate admission with transfer credit determined through a course-by-
3. Holds a *licenciatura* degree from a program of less than four years' duration.	May be considered for graduate admission if a review of the program indicates adequate preparation for the proposed field of study.
4. Holds a *licenciatura* degree from a program of four or more years' duration.	May be considered for graduate admission.

5. Completed an undergraduate teacher training program and received the *maestro* or *profesor* degree.*	May be considered for graduate admission.
6. Holds a *licenciatura* degree in dentistry, medicine, pharmacy or veterinary medicine.	May be considered to have a first professional degree in the field and may be considered for graduate admission.

C. Graduate Credentials (pp. 161-163)

NOTE: Students who have completed some coursework for any of the programs listed below may be considered for graduate admission with up to a maximum of 30 semester hours of transfer credit for each year, determined through a course-by-course analysis.

1. Completed a graduate-level *curso de actualización*.	May be considered for graduate transfer credit to be determined through a course-by-course analysis.
2. Holds a graduate-level *especialista* degree from a dentistry, medical, nursing, veterinary medicine, or other clinical program.	May be considered to have a credential comparable to a graduate specialization in the respective field in the United States.
3. Holds a graduate-level *especialista* degree from a non-clinical program.	May be considered for graduate admission with transfer credit to be determined through a course-by-course analysis.
4. Holds a graduate-level *maestría* degree.	May be considered to have a degree comparable to a master's degree in the United States.
5. Holds a *doctorado* degree.	May be considered to have a degree that represents a level of training beyond the master's degree; it may approach and is sometimes comparable to a doctoral degree in the United States.

*This does not apply to the *maestro* or *profesor* degree when it is awarded at the upper secondary level or as a *salida lateral*, i.e., *profesor de enseñanza técnica industrial* of the CeNETI.

Appendix A

Schools with *Bachillerato* Programs Incorporated into the Universidad Nacional Autónoma de México/UNAM*

1. **Schools Offering Colegio de Ciencias y Humanidades/CCH† Programs:**

Academia Metici, Granjas No. 45 Z.P. 10, Palo Alto, México, D.F.

Centro Activo Freire, S.C.; Hortensias No. 22, Z.P. 20, Florida, México, D.F.

Centro de Ciencias y Humanidades de Tabasco, A.C.; Sánchez Magallanes No. 722, Villa-hermosa, Tabasco.

Centro de Ciencias y Humanidades de Zacatelco; Benito Juárez No. 18, Zacatelco, Tlaxcala.

Centro de Ciencias y Humanidades de Pihuamo; Ramón Corona No. 102, Pihuamo, Jalisco.

Centro de Integración Educativa, A.C.; Av. Casa de la Moneda No. 234, Z.P. 10, Irrigación, México, D.F.

Centro Educativo de Ciencias y Letras, A.C.; Prado Norte No. 615, Z.P. 10, Lomas de Chapul-tepec, México, D.F.

Centro Educativo Siddhartha, S.C.; Heriberto Frías No. 355, Z.P. 12, Narvarte, México, D.F.

Centro Escolar del Lago, A.C.; Fraccionamiento Lago de Guadalupe, Tlalnepantla, Edo. de México.

Centro Escolar Panamericano; Matías Romero No. 422, Z.P. 12, del Valle, México, D.F.

Colegio Alemán Alexander Von Humboldt; Benjamín G. Hill No. 43, Z.P. 11, Condesa, México, D.F.

Colegio Cervantes; Luis Pérez Verdía No. 361, Sector Hidalgo, Guadalajara, Jalisco.

Colegio de Ciencias y Humanidades Cajeme; R. Elías Calles No. 319, 2 Pte., Cd. Obregón, Sonora.

Colegio de Ciencias y Tecnología, A.C.; Medellín No. 79, Roma, México, D.F.

Colegio Enrique de Osso, A.C.; Brasilia No. 247, Col. Providencia Colomos, Guadalajara, Jalisco.

Colegio Guadalajara, A.C.; Av. López Mateos No. 2199 Sur, Guadalajara, Jalisco.

Colegio José Antonio González Pe'a; Minkowr. I Y Av. II (2 Caminos), Córdoba, Veracruz.

Colegio Libertadores de México, A.C.; Tlacotálpan No. 85, Z.P. 7, Roma, México, D.F.

Colegio Loyola del Pedregal S. de R.L.; Paseo del Pedregal No. 610, Z.P. 20, Pedregal de San Angel, México, D.F.

Colegio Martinak; Dr. Vértiz No. 936, Z.P. 12, Narvarte, México, D.F.

Colegio Suizo de México; Nicolás San Juan No. 917, Z.P. 12, del Valle, México, D.F.

Colegio Victoria; Av. Avila Camacho No. 335, Guadalajara, Jalisco.

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*National Autonomous University of Mexico.

†College of Sciences and Humanities.

NOTE: Appendix A was prepared from the list furnished by UNAM, and some of the addresses were unverifiable.

Comunidad Educativa Independencia; Pinos No. 13; Z.P. 20, Unidad Independencia, México, D.F.

De La Salle CCH, A.C.; San Fernando No. 34, Z.P. 22, Tlalpan, México, D.F.

Escuela Preparatoria Activa; Amsterdan No. 155, Z.P. 11, Hipódromo Condesa, México, D.F.

Escuela Preparatoria Carlos Pereyra; Av. Mayrán 450, Torreón, Coahuila.

Escuela Preparatoria de Tlayacapan; Domicilio Conocido, Tlayacapan, Morelia.

Escuela Preparatoria Prof. José María Licona; Av. Toluca No. 621, Z.P. 20, Olivar de Los Padres, México, D.F.

Escuela Preparatoria José Ma. Morelos y Pavón; Carretera al Sur (Domicilio Conocido), La Paz, Baja California Sur.

Escuela Preparatoria Municipal Ozumba; Palacio Municipal 60104, Ozumba, Edo. de México.

Escuela Preparatoria Particular Uparín; Av. Morelos Pte. No. 51, Ecatepec, Edo. de México.

Instituto América, A.C.; J.G. Andrade No. 353 Norte, Culiacán, Sinaloa.

Instituto Arboledas; Av. Río Sur No. 13, Arboledas, Edo. de México.

Instituto Asunción de México, A.C.; Calz. de Las Aguilas No. 219, Z.P. 20, Las Aguilas, México, D.F.

Instituto Campos Eliseos; Montañas Calizas No. 720, Z.P. 10, Lomas de Chapultepec, México, D.F.

Instituto Cultural Tampico; Av. Universidad s/n, Tampico, Tamaulipas.

Instituto de Ciencias, A.C.; Av. Avila Camacho 2935, Guadalajara, Jalisco.

Instituto Freinet de México, S.C.; Cracovia No. 54, Z.P. 2, San Angel, México, D.F.

Instituto Guadalupe Insurgentes, A.C.; Av. Ing. Antonio Narro Acuña 142, Z.P. 14, Gpe. Insurgentes, México, D.F.

Instituto Mexicano de Bachilleres; Campana No. 17, Z.P. 19, Mixcoac, México, D.F.

Instituto Moderno de México; Adolfo Prieto No. 1810, Z.P. 12, del Valle, México, D.F.

Instituto Oriente; 14 Sur y Bulevar San Francisco, Puebla, Puebla.

Instituto Patria Nueva, A.C.; Eugenia No. 1010, Z.P. 12, del Valle, México, D.F.

Instituto Quetzalcóatl; 11 Poniente No. 172 o Calle 5 Sur 1103, Puebla, Puebla.

Instituto Sebastián de Aparicio; Sierra Mojada No. 447, Z.P. 10, Lomas, México, D.F.

Instituto Teresa de Avila; González Cosío No. 230, Z.P. 12, del Valle, México, D.F.

Nuevo Colegio Israelita de Ciencias y Humanidades; Av. Parque Chapultepec 16 F. El Parque, Edo. de México.

Preparatoria Femenil; Paseo del Prado y Bello Horizonte, Guadalajara, Jalisco.

Preparatoria Nocturna; Montenegro No. 1441, Guadalajara, Jalisco.

Preparatoria Varonil; Yaquis y Palermo, Guadalajara, Jalisco.

Universidad Latina, A.C.; Chihuahua No. 202, Z.P. 7, México, D.F.

2. **Schools Offering Escuela Nacional Preparatoria/ENP* Programs:**

Academia Militarizada México; Arq. Carlos Lazo No. 21, Z.P. 18, Tacubaya, México, D.F.

Bachillerato Alexander Bain, S.C.; Flores No. 497, Z.P. 25, Tlacopac, México, D.F.

Bachillerato de la Reina de México; Cerrada San Jerónimo No. 143, Z.P. 20, México, D.F.

Centro Educativo México; Corregidores No. 1419, Z.P. 10, Lomas Virreyes, México, D.F.

Centro Escolar del Paseo; Av. del Paseo No. 19, Fracc. Colón Echegaray, Naucalpan, Edo. de México.

*National Preparatory School.

Centro Escolar Universitario; Av. Chapultepec No. 411, Z.P. 6, Juárez, México, D.F.

Centro Escolar Yaocallí; Cerrada de Cd. de León No. 40, Z.P. 22, Tlalpan, México, D.F.

Centro Humanístico de Bachilleres; Av. México No. 6285, Z.P. 23, San Marcos, México, D.F.

Centro Universitario Anglo Mexicano, Sagredo No. 182, Z.P. 19, San José Insurgentes, México, D.F.

Centro Universitario de San Angel; Cerro Xico No. 24, Z.P. 21, Oxtopulco Universidad, México, D.F.

Centro Universitario Dr. Emilio Cárdenas; Av. Tlacomulco No. 191, La Loma, Edo. de México.

Colegio Amado Nervo; Bajío No. 220, Z.P. 7, Roma Sur, México, D.F.

Colegio Boston de México, A.C.; Farallón No. 125, Z.P. 20, Jardines del Pedregal, México, D.F.

Colegio Clásico de México; Certificados No. 42, Z.P. 13, México, D.F.

Colegio Columbia, Bondojito No. 290, Z.P. 18, Tacubaya, México, D.F.

Colegio Coronet Hall; Colima No. 159, Z.P. 7, Roma, México, D.F.

Colegio de la Paz (Vizcaínas); Vizcaínas No. 21, Z.P. 1, México, D.F.

Colegio del Bosque; Bosques de Huizache No. 110, Z.P. 10, Bosques de las Lomas, México, D.F.

Colegio del Tepeyac; Av. Callao No. 842, Z.P. 14, Lindavista, México, D.F.

Colegio de Montaignac; Heriberto Frías No. 1401, Z.P. 12, del Valle, México, D.F.

Colegio El Porvenir; Carlota No. 68, Z.P. 14, Guadalupe Tepeyac, México, D.F.

Colegio Francés del Pedregal; Colegio No. 330, Z.P. 20, Jardines del Pedregal, México, D.F.

Colegio Francés Hidalgo de México; Av. Acueducto No. 30, Z.P. 14, Santa Isabel Tola, México, D.F.

Colegio Francés Pasteur; Av. Schiller No. 139, Z.P. 5, Chapultepec Morales, México, D.F.

Colegio Franco Español; Av. Miguel Angel de Quevedo No. 287, Coyoacán, México, D.F.

Colegio Franco Inglés; Ant. Cam. A. Tecamachalco s/n, Z.P. 18, Cuajimalpa, México, D.F.

Colegio Fray Luis de León; Prolongación Pino Suárez No. 349, Querétaro, Querétaro.

Colegio Green Hills, S.C.; San Bernabé No. 960, Z.P. 20, San Jerónimo, México, D.F.

Colegio Guadalupe; Av. Managua No. 852, Z.P. 14, Lindavista, México, D.F.

Colegio Hamilton; Castillo de Miramar No. 45, Z.P. 10, Lomas Reforma, México, D.F.

Colegio Hebreo Monte Sinaí; Av. Parque de Chapultepec No. 56, del Parque N. de Juárez, Edo. de México.

Colegio Hebreo Tarbut; Lago Bangüeolo No. 36-B, Z.P. 17, Granada, México, D.F.

Colegio Hispano Americano; Pino No. 199, Z.P. 4, Sta. María la Ribera, México, D.F.

Colegio Holandés; Lafontaine No. 138, Z.P. 5, Polanco, México, D.F.

Colegio Indoamericano, S.C.; San Esteban No. 2, Col. del Parque N. de Juárez, Edo. de México.

Colegio Israelita de México, A.C.; San Lorenzo No. 290, Z.P. 12, del Valle, México, D.F.

Colegio Israelita Yavne; Agrarismo No. 221, Z.P. 18, Escandón, México, D.F.

Colegio La Florida; Indiana No. 165, Z.P. 18, Nápoles, México, D.F.

Colegio La Salle Bulevares; Colina del Kan No. 1 Fracc. Bulevares, Naucalpan de Juárez, Edo. de México.

Colegio Latinoamericano de México; Naranjo No. 151, Z.P. 4, Sta. Ma. la Ribera, México, D.F.

Colegio Madrid; Calle del Puente No. 224, Z.P. 22, Ex-Hacienda de San Juan, México, D.F.

Colegio Maestro I. Ochoterena; Lucerna No. 35 y 37, Z.P. 6, Juárez, México, D.F.

Colegio Margarita de Escocia; Campos Elíseos No. 234, Z.P. 5, Polanco, México, D.F.

Colegio Mercedes; Arequipa No. 796, Z.P. 14, Lindavista, México, D.F.

Colegio México, A.C.; Calle Norte 24 No. 229, Orizaba, Veracruz.

Colegio Miguel de Bolonia; La Salle No. 14, San Juan de Los Lagos, Jalisco.

Colegio Militarizado Moderno Alarid; Av. Revolución No. 462, Z.P. 18, San Pedro de Los Pinos, México, D.F.

Colegio Miraflores; Rafael Alducín No. 8, Z.P. 1, del Periodista, México, D.F.

Colegio Mixcoac; San Francisco No. 1640, Z.P. 12, del Valle, México, D.F.

Colegio Mixcoac Polanco; Homero No. 923, Z.P. 5, Polanco, México, D.F.

Colegio Motolinía; Dalias No. 409, Col. Reforma, Oaxaca, Oaxaca.

Colegio Nueva Galicia; Hidalgo No. U083, Sector Hidalgo, Guadalajara, Jalisco.

Colegio Oxford; Antiguo Camino a Acapulco No. 287, Z.P. 20, Villa Obregón, México, D.F.

Colegio Preparatoria Córdoba; San Borja No. 812, Z.P. 12, del Valle, México, D.F.

Colegio Reyna María; Balsas No. 12, Z.P. 5, Cuauhtémoc, México, D.F.

Colegio Sefardí; Progreso No. 23, Z.P. 2C, Florida, México, D.F.

Colegio Simón Bolívar; Av. Río Mixcoac No. 125, Z.P. 19, México, D.F.

Colegio Tepeyac del Valle; Iztaccíhuatl No. 178, Z.P. 20, Florida, México, D.F.

Colegio Versalles; Alabama No. 34, Z.P. 18, Napoles, México, D.F.

Colegio Vista Hermosa; Av. Loma Vista Hermosa No. 221, Z.P. 10, México, D.F.

Colegio Wenstminster; Camino Sta. Teresa a Tlalpan 511, Z.P. 2, Pedregal de San Angel, México, D.F.

Colegio Williams; Empresa No. 8, Z.P. 19, Mixcoac, México, D.F.

Escuela Benjamín Franklin; Insurgentes Norte No. 1423, Z.P. 14, Guadalupe Insurgentes, México, D.F.

Escuela Manuela Catano, A.C.; Magisterio Nacional No. 9, Z.P. 22, Toriello, México, D.F.

Escuela Mexicana Americana; Gabriel Mancera No. 1651, Z.P. 12, del Valle, México, D.F.

Escuela Moderna Americana; Nicolás San Juan No. 1141, Z.P. 12, del Valle, México, D.F.

Escuela Preparatoria Anáhuac; Altamirano No. 330, La Paz, Baja California Sur.

Escuela Preparatoria Ignacio L. Vallarta; Sierra Gamón No. 105, Z.P. 1, Lomas de Chapultepec, México, D.F.

Escuela Preparatoria Maddox; Circunvalación Pte. 38, Cd. Satélite, Edo. de México.

Escuela Preparatoria Samuel Ramos; Altamirano Sur No. 16, Zitácuaro, Michoacán.

Escuela Preparatoria Villanueva Montaño; Calz. de Tlalpan No. 2441, Z.P. 21, Xotepingo, México, D.F.

Escuela Secundaria y Preparatoria Nocturna Lic. Benito Juárez; Cruces y Mesones, Z.P. 1, México, D.F.

Institución Educativa Héroes de la Libertad; Popocatépetl No. 249, Z.P. 13, Portales, México, D.F.

Instituto América; Galeana No. 346, Guadalajara, Jalisco.

Instituto Americano Kennedy; Eugenia No. 1010, Z.P. 13, del Valle, México, D.F.

Instituto Canadiense de México; Adolfo Prieto No. 1513, Z.P. 12, del Valle, México, D.F.

Instituto Centro Unión, S.C.; Presidente Carranza No. 164, Z.P. 21, Coyoacán, México, D.F.

Instituto Cultural, A.C.; Av. Miguel A. de Quevedo No. 1190, Z.P. 21, México, D.F.

Instituto Cumbres; Rosedal No. 50, Z.P. 1, Lomas de Chapultepec, México, D.F.

Instituto de Ciencias y Tecnología de Tampico; Mango No. 217, Altavista, Tampico, Tamaulipas.

Instituto de Estudios Superiores de Los Mochis; Carretera Ahome y Contry Club, Los Mochis, Sinaloa.

Instituto de Humanidades y Ciencias; Fuentes No. 18, Z.P. 22, Tlalpan, México, D.F.

Instituto de Humanidades y Ciencias de Guadalajara; Av. Félix Rougier 175, Loma Bonita, Chapalita, Guadalajara, Jalisco.

Instituto de Integración Cultural; Ignacio Ramírez No. 2, Tultepec, Edo. de México.

Instituto Dr. Manuel Sandoval Vallarta, Cóndor No. 11, Z.P. 20, Alpes, México, D.F.

Instituto Educativo Olinca; Anillo Periférico Sur No. 5170, Jardines del Pedregal, México, D.F.

Instituto Esperanza; Golfo de México No. 19, Z.P. 17, Tacuba, México, D.F.

Instituto Etac de Estudios Superiores, A.C.; Viveros de Asís No. 92 al 98, Viveros de la Loma, Edo. de México.

Instituto Francisco Posenti, A.C.; Av. Toluca No. 621, Z.P. 20, Olivar de Los Padres, México, D.F.

Instituto Fray Junípero Serra; Jardín No. 14, Atlántida, Coyoacán, México, D.F.

Instituto Hispano Inglés de México, A.C.; General Cano No. 153, Z.P. 18, Tacubaya, México, D.F.

Instituto Irlandés; Tanforan s/n, Z.P.10, Lomas Hipódromo, México, D.F.

Instituto Juan Escutia; Tehuantepec No. 250, Z.P. 7, Roma, México, D.F.

Instituto Juárez; Cuauhtémoc No. 99, Z.P. 21, Coyoacán, México, D.F.

Instituto Juventud; Sta. María La Ribera No. 72, Z.P. 4, México, D.F.

Instituto Juventud del Edo. de México; Calz. San Agustín No. 61, Pastores Naucalpan, Edo. de México.

Instituto Latino de México; Miguel Angel No. 73, Z.P. 19, México, D.F.

Instituto Luis Vives; Benjamín Franklin No. 38, Z.P.18, Escandón, México, D.F.

Instituto Luz Casanova; Av. 5 No. 89, Z.P. 13, Granjas San Antonio, México, D.F.

Instituto María Curie; Fancisco Moreno No. 136, Z.P. 14, Aragón, México, D.F.

Instituto María Isabel, A.C.; Dr. Vértiz No. 153, Z.P. 7, México, D.F.

Instituto Marillac; Calle de Frontera No. 60, Z.P. 2, San Angel, México, D.F.

Instituto Mexicano Francés; Dr. Vértiz No. 735, Z.P. 12, Narvarte, México, D.F.

Instituto Mexicano Madero; 17 Poniente 503, Puebla, Puebla.

Instituto Mexicano Regina, A.C.; Rivera de Cupia No. 70, Z.P. 10, Lomas de Chapultepec, México, D.F.

Instituto Miguel Angel, A.C.; Tlacoquémecatl No. 433, Z.P. 12, del Valle, México, D.F.

Instituto Pedagógico Anglo Español; Jalapa No. 44, Z.P. 7, Col. Roma, México, D.F.

Instituto Peuagógico Iztaccíhuatl S.C.; Playa Regatas No. 313, Z.P. 13, México, D.F.

Instituto Plancarte Valladolid; Diego J. Abad No. 250, Morelia, Michoacán.

Instituto Querétaro; M. Arista 51, Querétaro, Querétaro.

Instituto Renacimiento; Orizaba No. 126 y 136, Z.P. 7, Col. Roma, México, D.F.

Instituto Salamanca; Agua Caliente No. 205, Lomas Hipódromo N. de Juárez, Edo. de México.

Instituto San Mateo; Cipreses No. 59, Jardines de San Mateo, Edo. de México.

Instituto Simón Bolívar; Av. Universidad No. 1080, Z.P. 13, Col. General Anaya, México, D.F.

Instituto Superior de Estudios Comerciales; Mier y Pesado No. 227, Z.P. 12, del Valle, México, D.F.

Instituto Universitario de Ciencias de la Educación; Colegio Salesiano No. 35, Z.P. 17, Anáhuac, México, D.F.

Instituto Universitario de México; División del Norte No. 2571, Col. del Carmen, México, D.F.

Instituto Universitario León Felipe; Cda. de La Paz No. 33, Z.P. 18, Escandón, México, D.F.

Instituto Vasco de Quiroga; Salamanca No. 11, Z.P. 7, Roma, México, D.F.

Instituto Whitt; Naranjo No. 79, Z.P. 20, Florida, México, D.F.

Instituto Zaragoza; Paseo de México No. 90, Jardines de Atizapán, Edo. de México.

Logos Escuela de Bachilleres, S.C.; Manuel López Cotilla No. 1322, del Valle, México, D.F.

Preparatoria Benemérito de las Américas; Carretera Tenayuca Chalmita 828, Z.P. 14, México, D.F.

Preparatoria Betrand Russell; Durango No. 119, Z.P. 7, Col. Roma Sur, México, D.F.

Preparatoria Fernando R. Rodríguez; Arenal No. 36, Z.P. 20, La Florida, México, D.F.

Preparatoria Fray Bernardino de Sahagún; Calzada de Guadalupe No. 300, Col. Vallejo, México 14, D.F.

Preparatoria Fray Juan de Padilla; Nicolás García San Vicente No. 130, Tulancingo, Hidalgo.

Preparatoria La Salle del Pedregal; Paseo del Pedregal No. 915, Z.P. 20, San Angel, México, D.F.

Preparatoria Maestro Antonio Caso; Baja California No. 197, Z.P. 7, Roma Sur, México, D.F.

Preparatoria Monte Albán; Capuchinas No. 59, Z.P. 19, San José Insurgentes, México, D.F.

Preparatoria Rudyard Kipling; Cruz del Valle Verde No. 25, Sta. Cruz del Monte, Naucalpan, Edo. de México.

Preparatoria Universitaria Lindavista; Cienfuegos No. 743, Z.P. 14, Col. Lindavista, México, D.F.

Preparatoria y Secundaria Cervantes, S.C.; Sadi Carnot No. 56, Z.P. 4, San Rafael, México, D.F.

Preparatoria Zumárraga, A.C.; Gabriel Mancera No. 327, Z.P. 12 del Valle, México, D.F.

Tecnológico Universitario de México; Av. Azcapotzalco No. 30[illegible], Z.P. 16, México, D.F.

Tecnológico Universitario de México (Tlal.); Dr. Emilio Cárdena. No. 24, Tlalnepantla, Edo. de México.

Universidad del Valle de México Tlalpan; San Juan de Diós No. 6, Z.P. 22, Tlalpan, México, D.F.

Universidad Femenina de México; Constituyentes No. 151, Z.P. 18, Tacubaya, México, D.F.

Universidad Hispano Mexicana; Emilio Castelar No. 63, Z.P. 5, Polanco, México, D.F.

Universidad La Salle; Benjamín Franklin No. 47, Z.P 18, Col. Tacubaya, México, D.F.

Universidad Lasallista Benavente; Prolongación Tenochtitlán s/n, Celaya, Guanajuato.

Universidad Latinoamericana; Gabriel Mancera No. 1402 esq. s/n Lorenzo Z.P., del Valle, México, D.F.

Universidad Motolinia; Ameyalco Oregon y Magdalena, Z.P. 12, del Valle, México, D.F.

Universidad Panamericana; Tecoyotitla No. 366, Z.P. 20, Col. Florida, México, D.F.

3. **Schools Offering CCH and ENP Programs:**

Centro Educativo Albatros; Bosque de Moctezuma No 124 F. la Herradura, Nau. de Juárez, Edo. de México.

Centro Universitario México; Nicolás San Juan No. 728, Z.P. 12, del Valle, México, D.F.

Escuela Secundaria y Preparatoria de la Ciudad de México; Campos Eliseos No. 139, Polanco, México, D.F.

Instituto Cultural Don Vasco, A.C.; Entronque Nva. Carretera a Pátzcuaro s/n, Uruapan, Michoacán.

Instituto Don Bosco; Avena No. 196, Z.P. 13, Esmeralda, México, D.F.

Universidad del Valle de México, Mérida No. 33, Z.P. 7, Col. Roma, México, D.F.

Appendix B

Institutions with Nursing Programs Incorporated by UNAM

Escuela de Enfermería C.R. Mex Deleg. San Luis Potosí; Av. Juárez No. 540, San Luis Potosí, S.L.P.

Escuela de Enfermería de la Cruz Roja de Monclova; Av. Francisco I. Madero No. 706, Col. Guadalupe, Monclova, Coahuila.

Escuela de Enfermería de la Cruz Roja de Monterrey; Av. Universidad 2503 Norte, del Prado, Monterrey, N.L.

Escuela de Enfermería de la Cruz Roja Mexicana; Av. Ejército Nacional No. 1032 Z.P. 10, México, D.F.

Escuela de Enfermería de la Secretaría de Salubridad y Asistencia; Chihuahua No. 50, Z.P. 7, Roma Sur, México, D.F.

Escuela de Enfermería del Hospital Anglo-Americano; Sur 136 y Av. Observatorio, Z.P. 18, México, D.F.

Escuela de Enfermería del Hospital Colonia de Ferrocarriles Nacionales de México; Villalongín No. 117, Z.P. 5, Cuauhtémoc, México, D.F.

Escuela de Enfermería del Hospital de México; Agrarismo No. 208, Z.P. 18, Escandón, México, D.F.

Escuela de Enfermería del Hospital de Nuestra Señora de la S.; Eduardo Ruiz No. 152, Morelia, Michoacán.

Escuela de Enfermería del Hospital Español; Ejército Nacional No. 613, Z.P. 5, Polanco, México, D F.

Escuela de Enfermería del Hospital San Vicente; Serafín Peña No. 106 Nte., Monterrey, N.L.

Escuela de Enfermería del Instituto Mexicano del Seguro Social; Av. Cuauhtémoc No. 330, Z.P. 7, México, D.F.

Escuela de Enfermería del Instituto Miguel Hidalgo; 16 de Septiembre No. 102 Ote., Arbol Grande, Cd. Madero, Tamaulipas.

Escuela de Enfermería del Instituto Nacional de Cardiología; Juan Badiano No. 1, Sección XVI, Z.P. 22, México, D.F.

Escuela de Enfermería del Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado; Roberto Gayol No. 1421, Z.P. 12, del Valle, México, D.F.

Escuela de Enfermería de Serv. M. del Departamento del Distrito Federal; Calz. México Tacuba No. 595, Z.P. 17, Tacuba, México, D.F.

Escuela de Enfermería de Zamora, A.C.; Hidalgo No. 62 Sur, Zamora, Michoacán.

Escuela de Enfermería Dr. J. Jesús Silva; Calz. Fray Juan de San Miguel No. 6, Uruapan, Michoacán.

Escuela de Enfermería Dr. L. J. Coppedge; General Bravo No. 50, Chapultepec, Morelia, Michoacán.

Escuela de Enfermería Escandón; Gaviota No. 27, Z.P. 16, Tacubaya, México, D.F.

Escuela de Enfermería Guadalupe; San Lorenzo No. 13, Z.P. 14, Tepeyac Insurgentes, México, D.F.

Escuela de Enfermería Isabel la Católica; Francisco I. Madero No. 59 Sur, Torreón, Coahuila.

Escuela de Enfermería María Maya de Brito; Av. San Fernando y Vasco de Quiroga s/n, Z.P. 2, Tlalpan, México, D.F.

Escuela de Enfermería y Obstetricia de la C. y M.C.; Matamoros No. 1603 Pte., María Luisa, Monterrey, N.L.

Instituto Marillac; Frontera No. 60, Z.P. 2, San Angel, México, D.F.

Universidad Autónoma de Guadalajara; Paseo de las Aguilas No. 7001, Lomas del Valle, Guadalajara, Jalisco.

Appendix C

Institutions of Higher Education in Mexico

This list of institutions of higher educatior includes the address and, if available, the founding date, and 1977-78 undergraduate enrollment. Each institution has been coded according to one of six categories as follows: (1) public autonomous; (2) public state; (3) federal; (4) private independent or free; (5) private institutions, some of whose programs have official validity; and (6) private institutions whose programs do not have official validity or for whom the source of validity is unknown. For institutions in category 3, the abbreviation or name of the administering federal agency/institution is included, and for those in category 5, the name of the recognizing or incorporating agency/institution. For more information on these institutions, see Chapters IV and V.

Institution/Founding Date/ Enrollment	Address	Code	Sponsoring Agency/ Institution
Academia del Aire, S.A.	Calle Economía, Esquina Avenida Hangares, Col. Federal, México 9, D.F.	5	SCT
Aero Escuela, S.A.	Hangar No. 12, Aeropuerto Internacional, México 9, D.F.	5	SCT
Asociación Satélite de Estudios Culturales	Estado de México	5	SEP
Avitec Escuela de Vuelo, S.C.	Lote 24 Terminal de Aviación Gen., Aeropuerto International, México 9, D.F.	5	SCT
Arte, A.C., Escuela de Diseño	Belisario Domínguez No. 2202, Col. Obispado, Monterrey, N.L.	5	SEP
Centro de Enseñanza Técnica y Superior/CETYS/1961/745	Calz. CETYS s/n, Apdo. Postal 3-797, Mexicali, B.C. Norte	5	SEP
Centro de Estudios "Cristóbal Colón"/734	Carretera Boticaria, Km. 1½, Veracruz, Ver.	5	Universidad Veracruzana
Centro de Estudios de Licenciatura de Educación Normal	Gral. Félix Ortega y Escuela Normal, La Paz, B.C. Sur	3	SEP
Centro de Estudios en Ciencias de la Comunicación	Xochicalco No. 678, México 12, D.F.	5	SEP

SOURCE: *Anuario Estadístico*, 1978. Asociación Nacional de Universidades e Institutos de Enseñanza Superior. México, D.F.: Imprenta Ajusco, 1979; *Los Estudios de Posgrado en México, 1978-79*. Asociación Nacional de Universidades e Institutos de Enseñanza Superior. México, D.F.: Imprenta Ajusco, 1979; *Carreras en el Sistema de Educación Superior de México*. Asociación Nacional de Universidades e Institutos de Enseñanza Superior. México, D.F.: Talleres de Imprenta Ajusco, 1981; Asociación Nacional de Universidades e Institutos de Enseñanza Superior. *Instituciones de Educación Superior, Directorio 1978-1979*. México, D.F.: Imprenta Ajusco, 1979.

Centro de Estudios Superiores de San Angel	—	5	SEP
Centro de Estudios Tecnológicos/CET/No. 7/200	Prol. Petén y República s/n, Col. Sta. Cruz Atoyac, México, D.F.	3	SEP
Centro de Estudios Universitarios de Monterrey/1938/2,841	Av. Hidalgo Pte. 524, Apdo. Postal 2499, Monterrey, N.L.	5	State of Nuevo León
Centro de Estudios Universitarios de Xochicalco	Km. 102 Carretera a Tijuana, Apdo. Postal 1377, Ensenada, B.C. Norte	5	State of B.C. Norte
Centro de Investigación Científica y de Educación Superior de Ensenada, B.C./ CICESE/1973	Av. Espinosa No. 843, Apdo. Postal 2732, Ensenada, B.C. Norte	3	Secretaría de Programación y Presupuesto
Centro de Investigaciones Superiores del Instituto Nacional de Antropología e Historia/CIS-INAH	*See* Centro de Investigaciones y Estudios Superiores en Antropología Social.		
Centro de Investigaciones y Estudios Superiores en Antropología Social	Hidalgo y Matamoros, Tlalpan, México 22, D.F.	3	SEP
Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional*/CIEA-IPN/1961	Av. Instituto Politécnico Nacional, No. 2508, Zacatenco Apdo. Postal 14-740, México 14, D.F.	3	SEP
Centro de Investigación y Docencia Económica, A.C./ CIDE	Carretera México-Toluca Km. 16.5, Apdo. Postal 10-883, México 10, D.F.	4	–
Centro Escolar Benito Juárez	5 de Febrero No. 443 Sur, Cd. Obregón, Son.	5	SEP/Univ. de Sonora
Centro Interamericano de Capacitación y Museografía/ CICM/1972	*See* Escuela Nacional de Conservación Restauración y Museografía "Manuel del Castillo Negrete".		
Centro Interamericano de Restauración de Bienes Culturales/CIRBC/1972	*See* above.		
Centro Interdisciplinario de Ciencias Marinas del Instituto Politécnico Nacional/ CICIMAR-IPN/216	El Conchalito, La Paz, B.C. Sur	3	SEP/IPN
Centro Interdisciplinario de Investigación y Docencia en la Educación Técnica/CIIDET	Av. Tecnológico y Mariano Escobedo, Querétaro, Qro.	3	SEP
Centro Internacional de Adiestramiento de Aviación Civil/CIAAC	Av. Hangares de Aviación No. 235, México 9, D.F.	5	SCT
Centro Latinoamericano de Estudios Universitarios/268	Canteras de Oxtopulco, No. 16, Col. Oxtopulco Universidad, México 20, D.F.	5	UNAM
Centro Nacional de Ciencias y Tecnologías Marinas	*See* Instituto de Estudios Superiores en Ciencias y Tecnología del Mar.		

Centro Nacional de Enseñanza Técnica Industrial/CeNETI/1964/1,066*	Av. de la Granjas No. 682, México 16, D.F.	3	SEP
Centro Regional de Enseñanza Técnica Industrial/CeRETI/de Guadalajara	Av. del Chaco No. 3223, Fracc. Providencia, Guadalajara, Jalisco	3	SEP/CeNETI
CeRETI del Soconusco/140	Carretera a Puerto Madero Km. 2, Tapachula, Chis.	3	SEP/CeNETI
Centro Regional de Estudios de Graduados e Investigación Tecnológica/CREGIT	—Km. 9, Carretera Panamericana Cd. Juárez, Chih. —1° de Mayo y Sor Juana Inés de la Cruz, Cd. Madero, Tamps. —Av. Tecnológico s/n, Chih., Chih. —Capitán Francisco Ibarra No. 1829 Oriente, Durango, Dgo. —Blvd. Revolución y Calz. Cuauhtémoc, Torreón, Coah. —Km. 5 Carretera Progreso, Mérida, Yuc. —Calz. del Tecnológico y Rivera del Río, Atoyac, Oax. —Blvd. V. Carranza y Av. Universidad, Saltillo, Coah. —Calz. Circunvalación Norte, Veracruz, Ver.	3	SEP
Centro Universitario de Ciencias Humanas	Ex-Convento de San Jerónimo, Plaza de San Jerónimo, No. 47, México 1, D.F.	5	SEP
Centro Universitario de Mazatlán	Cruz. No. 2, Apdo. Postal 275, Mazatlán, Sin.	5	UNAM/SEP
Centro Universitario del Norte/82	Padre de las Casas y Guerrero, Piedras Negras, Coah.	5	SEP
Centro Universitario Kennedy/41	Insurgentes 1616, San Jerónimo, Apdo. Postal 1803, Monterrey, N.L.	5	UNAM
Colegio de México	*See* El Colegio de México.		
Colegio de Michoacán	*See* El Colegio de Michoacán.		
Colegio de Postgraduados, Institución de Enseñanza e Investigación en Ciencias Agrícolas/1959	Chapingo, Edo. de México	3	SARH
Colegio Español de México, A.C./141	Artículo 123, No. 44, México 1, D.F.	5	SEP/IPN
Colegio Labastida	*See* Escuela Normal Superior Labastida.		
Colegio "Maestro José Calvo," S.C./142	Av. Cuauhtémoc No. 48, México 7, D.F.	5	IPN
Colegio Superior de Agricultura Tropical/CSAT/375*	Apdo. Postal 24, Cárdenas, Tabasco	3	SARH
Conservatorio Nacional de Música	Presidente Mazaryk No. 582, Col. Polanco, México 10, D.F.	3	SEP/INBA

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El Colegio de México/1938/45*	Camino al Ajusco No. 20, México 20, D.F.	4	–
El Colegio de Michoacán	Madero Sur No. 310, Zamora, Mich.	4	–
Escuela Aeronáutica Panamericana	Local B-4 Terminal de Aviación Gen., Aeropuerto Internacional, México 9, D.F.	5	SCT
Escuela Bancaria y Comercial/1929/1,531	Paseo de la Reforma, No. 202, México 6, D.F.	5	SEP
Escuela Comercial Cámara de Comercio/4	Querétaro No. 168, México 7, D.F.	5	SEP
Escuela de Administración y Contaduría Pública de Sinaloa/154	Antonio Rosales No. 277 Pte., Culiacán, Sin.	5	State of Sinaloa
Escuela de Arquitectura de Chihuahua, A.C.	Calz. H. Colegio Militar Antiguo Colegio La Salle s/n, Apdo. Postal 17-27, Chih., Chih.	5	Univ. Autónoma de Chihuahua
Escuela de Artesanía	*See* Escuela de Diseño y Artesanía.		
Escuela de Arte Teatral/91	Auditorio Nacional, México 18, D.F.	3	SEP/INBA
Escuela de Aviación "Francisco Tarazona," S.A.	Terminal de Aviación Gen. entre el Hangar del D.D.F. y Detenal Zona Appa, Aeropuerto Internacional, México 9, D.F.	5	SCT
Escuela de Aviación México, S. de R.L.	Av. de Hangares de Aviación Puerto 9, Aeropuerto Internacional, México 9, D.F.	5	SCT
Escuela de Aviación Naval/22	Campo Aéreo Las Bajadas, Veracruz, Ver.	3	SCT
Escuela de Aviación "Raúl Quevedo Vara"	Av. Hangares de Aviación No. 152, México 9, D.F.	5	SCT
Escuela de Dietética y Nutrición	—	5	SEP
Escuela de Diseño	*See* Escuela de Diseño y Artesanía.		
Escuela de Diseño y Artesanía/98	Balderas No. 125, México 1, D.F.	3	SEP
Escuela de Estudios Comerciales y Administrativos	Colina de la Rumorosa No. 70, Fracc. Boulevares, Naucalpan de Juárez, Edo. de México.	5	SEP
Escuela de Graduados y de Servicio de Sanidad	*See* Universidad del Ejército y Fuerza Aérea.		
Escuela de Ingeniería Municipal/239	Dr. Lucio No. 191-A, México 7, D.F.	4	–
Escuela de Medicina Física y Rehabilitación "Adele Ann Yglesias del Hospital ABC"	—	5	SEP

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Escuela de Medicina Veterinaria y Zootecnia de la Laguna, A.C.	Carretera Torreón Mieleras, Apdo. Postal 59, Torreón, Coahuila	5	State of Coahuila
Escuela de Odontología	Morelos No. 417, Chihuahua, Chih.	5	UNAM
Escuela de Periodismo "Carlos Septién García"/1949/331	Basilio Badillo No. 43, Piso 1, México 1, D.F.	5	SEP
Escuela de Salud Pública	Av. Dr. Francisco de P. Miranda No. 177, Lomas de Plateros, Mixcoac, México 19, D.F.	3	SSA
Escuela de Trabajo Social Cervantes de Monterrey	Espinoza No. 851 Ote., Monterrey, N.L.	5	UNAM/UANL
Escuela de Trabajo Social del Instituto Miguel Hidalgo	16 de Septiembre No. 172 Ote., Arbol Grande Cd. Madero, Tamps.	5	UNAM
Escuela de Trabajo Social de San Luis Potosí	Galeana No. 465, San Luis Potosí, S.L.P.	5	UNAM
Escuela de Trabajo Social de Tijuana/57	Calz. de Guadalupe No. 6, Fracc. La Villa, La Mesa, Apdo. Postal 885, Tijuana, B.C. Nte.	5	UNAM
Escuela de Trabajo Social "Vasco de Quiroga"/55	Patricio Sainz No. 449, del Valle, México 12, D.F.	5	UNAM
Escuela Libre de Administración y Contaduría Pública	*See* Escuela de Administración y Contaduría de Sinaloa.		
Escuela Libre de Derecho/608	Arcos de Belén esq. con Dr. Vértiz, México 7, D.F.	4	–
Escuela Libre de Derecho de Sinaloa/235	Rosales No. 266 Pte., Culiacán, Sin.	5	State of Sinaloa
Escuela Libre de Homeopatía de México/1912/300	Primera de Santa Lucía, No. 6, México 2, D.F.	4	–
Escuela Libre de Ingeniería Municipal	*See* Escuela de Ingeniería Municipal.		
Escuela Libre de Jurisprudencia de Sinaloa/57	Corregidora Altos s/n, Guasave, Sin.	5	State of Sinaloa
Escuela Libre de Psicología/360	Antiguo Edificio de Rectoría, Av. Universidad, Cd. Universitaria, Chihuahua, Chih.	5	Univ. Autónoma de Chihuahua
Escuela Médico Militar	*See* Universidad del Ejército y Fuerza Aérea.		
Escuela Mexicana del Aire	Av. Hangares 454, Aeropuerto Internacional, México 9, D.F.	5	SCT
Escuela Militar de Ingenieros	*See* Universidad del Ejército y Fuerza Aérea.		
Escuela Militar de Odontología	*See* Universidad del Ejército y Fuerza Aérea.		
Escuela Nacional de Agricultura	*See* Universidad Autónoma de Chapingo.		
Escuela Nacional de Antropología e Historia/ENAH/1942/1,749	Anillo Periférico Sur y Calle del Sapote, Cuicuilco, México 22, D.F.	3	SEP/INAH

Escuela Nacional de Biblioteconomía y Archivonomía/ ENBA/136	Viaducto Miguel Alemán No. 155, México 13, D.F.	3	SEP
Escuela Nacional de Capacitación Aduanera/126	Av. 20 de Noviembre No. 200, México 1, D.F.	3	Secretaría de Hacienda y Crédito Público
Escuela Nacional de Conservación, Restauración y Museografía "Manuel del Castillo Negrete"/ENCRM/80	Ex-Convento de Churubusco, Xicoténcatl y General Anaya, Coyoacán, México 21, D.F.	3	SEP/INAH
Escuela Nacional de Danza Clásica	Plaza Angel Salas s/n, México 5, D.F.	3	SEP/INBA
Escuela Nacional de Diseño y Artesanía	*See* Escuela de Diseño y Artesanía.		
Escuela Nacional de Fruticultura	Km. 14.5, Carretera México-Toluca, Palo Alto, México, D.F.	3	Comisión Nacional de Fruticultura
Escuela Nacional de Pintura y Escultura "La Esmeralda"	Plaza de San Fernando No. 14, Col. Guerrero, México 3, D.F.	3	SEP/INBA
Escuela Náutica "Cap. de Alt. Antonio Gómez Maqueo"/136	Calz. Gabriel Leiva s/n, Mazatlán, Sinaloa	3	SCT
Escuela Náutica Mercante de Tampico/135	Blvd. López Mateos y Constitución, Tampico, Tamps.	3	SCT
Escuela Náutica Mercante "Fernando Siliceo"/144	Blvd. Avila Camacho s/n, Veracruz, Ver.	3	SCT
Escuela Normal de Especialización	Campos Eliseos No. 467 y Bernard Shaw, México 5, D.F.	3	SEP
Escuela Normal de Especialización de Monterrey	Av. Tepeyac 1666 Pte., Colonia Pío X, Monterrey, N.L.	3	SEP
Escuela Normal Regional de Especialización de Saltillo	Hidalgo y Aldama, Saltillo, Coah.	3	SEP
Escuela Normal Superior/ ENS/Benavente	Calle 25 Ote. No. 9, Puebla, Pue.	5	SEP
ENS de Celaya	Luis de Velasco No. 225, Celaya, Gto.	5	State of Guanajuato
ENS de Chiapas	Av. 14 de Septiembre Pte. No. 1499 Altos, Tuxtla Gutiérrez, Chis.	2	–
ENS de Durango	Calle Pino Suárez No. 3000 Ote., Apdo. Postal 77, Durango, Dgo.	2	–
ENS de Guanajuato	Paseo de la Presa No. 76, Apdo. Postal No. 110, Guanajuato, Gto.	2	–
ENS de Jalisco	Lisboa 488, Col. Sta. Elena Estadio, Guadalajara, Jal.	2	–
ENS de la Federación de Escuelas Particulares (FEP)/ENS-FEP	Sadi Carnot 44, México, D.F.	5	SEP
ENS de la Laguna	Av. Victoria y Calle de la Llave Gómez Palacio, Dgo.	2	–
ENS del Estado de B.C. Sur	República y Altamirano, La Paz, B.C. Sur	2	–

ENS del Estado de Coahuila/ 1944	Calle Aldama Pte. No. 858, Apdo. Postal 239, Saltillo, Coah.	2	–
ENS del Estado de México No. 1	Natalia Carrasco No. 400, Col. Federal, Toluca, Edo. de México.	2	–
ENS del Estado de México No. 2	Av. Revolución y Av. de los Maestros, Ecatepec, Edo. de México.	2	–
ENS del Estado de Morelos	Av. Palmas No. 13, Col. Bellavista, Apdo. Postal 1275, Cuernavaca, Mor.	2	–
ENS del Estado de Nuevo León/ENS-NL	Centro Escolar Venustiano Carranza, Amberri y Venustiano Carranza, Monterrey, N.L.	2	–
ENS del Estado de Puebla	11 Sur No. 1102, Puebla, Pue.	2	–
ENS del Estado "José E. Medrano"	Calle Ramírez y 6a, Apdo. Postal 769, Chihuahua, Chih.	5	State of Chihuahua
ENS del Sur de Tamaulipas	Ayuntamiento y Nicolás Bravo, Col. Martock, Tampico, Tamps.	5	State of Tamaulipas
ENS de México	Fresno No. 15, México 4, D.F.	3	SEP
ENS de Michoacán "José María Morelos"	Calz. Juárez s/n, Morelia, Mich.	2	–
ENS de Nayarit	Cd. de la Cultura, Amado Nervo, Apdo. Postal 361, Tepic, Nayarit	2	–
ENS de Oaxaca, A.C.	Prol. 20 de Noviembre s/n, Col. Alemán, Apdo. Postal 483, Oaxaca, Oax.	5	State of Oaxaca
ENS de Querétaro	Ex-Ejido de Casa Blanca, Apdo. Postal 716, Querétaro, Qro.	2	–
ENS de Sinaloa	Calle Zaragoza No. 101 Ote., Mazatlán, Sin.	2	–
ENS de Tamaulipas, A.C.	Carretera Soto La Marina Km. 2, Apdo. Postal 328, Cd. Victoria, Tamps.	5	State of Tamaulipas
ENS de Yucatán	Calle 59 No. 426, Mérida, Yuc.	2	–
ENS Federal de Aguascalientes	Camino de las Cumbres Frente a la U. Habitacional "Benito Juárez," Apdo. Postal 450, Aguascalientes, Ags.	3	SEP
ENS "Juana de Asbaje"	Dr. Verduzco 360 Sur, Zamora, Mich.	5	SEP
ENS "Justo Sierra"	Juárez 523, León, Gto.	5	State of Guanajuato
ENS "Justo Sierra," A.C.	Sector Poniente, Puebla, Puebla	5	SEP
ENS Labastida	José Vasconcelos Ote., No. 110, del Valle, Garza García, N.L.	5	SEP
ENS "Nueva Galicia," A.C.	Luis Pérez Verdía 361, Guadalajara, Jal.	5	SEP
Escuela Profesional de Comercio y Administración de León/552	Independencia No. 1706, León, Gto.	5	Univ. de Guanajuato

Escuela Profesional de Contabilidad y Administración "Maestro José Calvo"	*See* Colegio "Maestro José Calvo."		
Escuela Superior de Administración de Instituciones	Canteras de Ostopulco No. 16, Col. Ostopulco, México 20, D.F.	5	UNAM
Escuela Superior de Agricultura "Hermanos Escobar"/1,428	Km. 12.5 Carretera Panamericana, Apdo. Postal 2119, Cd. Juárez, Chih.	5	Univ. Autónoma de Chihuahua
Escuela Superior de Agricultura y Veterinaria/52	Madrovio Herrera Iyescas San Buenaventura, Coah.	5	State of Coahuila
Escuela Superior de Contabilidad y Administración de Guasave	Vicente Guerrero y Miguel Hidalgo, Guasave, Sin.	5	State of Sinaloa
Escuela Superior de Educación Física	Puerta 4 Cd. Deportiva Magdalena Mixuca, México 8, D.F.	3	SEP
Escuela Superior de Guerra	*See* Universidad del Ejército y Fuerza Aérea.		
Escuela Superior de Música	Vallarta No. 24, Coyoacán, México, D.F.	3	SEP/INBA
Facultad Latinoamericana de Ciencias Sociales/FLACSO/1977	Camino al Ajusco s/n, México 20, D.F.	6	–
Facultades Universitarias de Saltillo, A.C./220	Allende Sur No. 225, Saltillo, Coah.	5	Univ. Autónoma de Coah.
Heroica Escuela Naval Militar "Antón Lizardo"/530	Antón Lizardo, Veracruz	3	Secretaría de Marina
Instituto Activo de Mercadotecnia y Publicidad	—	5	SEP
Instituto Allende	San Miguel de Allende, Gto.	5	Univ. de Guanajuato
Instituto América	Calz. del Tepeyac s/n, León, Gto.	5	State of Gto.
Instituto Cuauhtlatohuac	Calle Juan Sarabia No. 2244, Tijuana, B.C. Norte	5	UNAM
Instituto Cultural Don Vasco, A.C./89	Entronque Nueva Carretera a Pátzcuaro s/n, Apdo. Postal 66, Uruapan, Mich.	5	UNAM
Instituto Cultural Isidro Fabela, A.C.	Gonzalez y Pichardo No. 1219, Toluca, Edo. de México.	5	Univ. Autónoma del Edo. de México
Instituto de Ciencias Sociales, Económicas y Administrativas/337	Balderas No. 138 Piso 1, México 1, D.F.	5	SEP
Instituto de Ciencias y Artes de Chiapas*	2a. Sur Oriente No. 620, Tuxtla Gutiérrez, Chis.	6	–
Instituto de Ciencia y Cultura, A.C./207	Victoria Pte. No. 311, Saltillo, Coah.	5	Univ. Autónoma de Coahuila

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Instituto de Cultura Superior/ 47	Av. Prado Norte No. 664, Lomas de Chapultepec, México, D.F.	5	SEP
Instituto de Enseñanza e Investigación Superior en Comercio Internacional	Monterrey 242, México 7, D.F.	5	SEP
Instituto de Especialización para Ejecutivos, A.C.	Rio Sena No. 51, Col. Cuauhtémoc, México 5, D.F.	5	SEP (in process)
Instituto de Estudios Profesionales de Saltillo, A.C./478	Acuña 909 Nte., Saltillo, Coah.	5	Univ. Autónoma de Coahuila
Instituto de Estudios Superiores en Ciencias y Tecnología del Mar/ IESCITEM/1967/183	General Figueroa y Rayón, Veracruz, Ver.	3	SEP
Instituto de Estudios Profesionales para la Administración del Tiempo Libre	—	5	SEP
Instituto de Estudios Superiores del Estado de México	—	5	SEP
Instituto de Estudios Superiores de Tamaulipas	Privada Chairel No 2, Col. Ex-Country Club, Tampico, Tamps.	5	State of Tamps.
Instituto de Estudios Universitarios	Chih. 156, Piso 1, Col. Roma, México 7, D.F.	5	SEP
Instituto de Formación Profesional	Niños Héroes No. 61. México D.F.	3	Procuraduría Gen. de Justicia del D.F.
Instituto de Intérpretes y Traductores	Rio Rhin No. 40, México 5, D.F.	5	SEP
Instituto del Noroeste	Angel Flores No. 247 Ote., Culiacán, Sinaloa	5	State of Sinaloa
Instituto John F. Kennedy	*See* Centro Universitario Kennedy.		
Instituto Latinoamericano de la Comunicación Educativa/ ILCE/1954	J. Luis Vives 200-1, Apdo. Postal 94-328, México 10, D.F.	6	–
Instituto Leonardo Bravo/9	Esequiel Montes No. 115, México 4, D.F.	5	SEP
Instituto Mexicano de Administración Bancaria	—	5	SEP
Instituto Mexicano de Rehabilitación	San Fernando No. 15, Tlalpan, México 22, D.F.	5	SEP
Instituto Miguel Hidalgo	*See* Escuela de Trabajo Social del Instituto Miguel Hidalgo.		
Instituto Nacional de Astrofísica, Optica y Electrónica/ INAOE	Tonantzintla, Apdo. Postal 51 y 216, Puebla, Pue.	3	–
Instituto Nacional de Pediatría-Hospital del Niño	Hospital del Niño, Insurgentes Sur, México 20, D.F.	3	DIF
Instituto Nacional de Perinatología	Montes Urales No. 800, Col. Lomas Virreyes, México 10, D.F.	3	DIF
Instituto Poblano de Estudios Superiores, A.C.	Mina No. 1, Huachinango, Puebla	5	SEP

Instituto Politécnico Nacional/IPN/1937/73,547*	Unidad Profesional Zacatenco, México 14, D.F.	3	SEP
Instituto Superior Agropecuario Autónomo del Estado de Guerrero	Carretera Iguala Tuxpan Km. 2, Iguala, Gro.	1	–
Instituto Superior de Arquitectura	—	5	SEP
Instituto Superior de Ciencia y Tecnología de La Laguna, A.C./ISCYTAC/329	Héroes de Nacozari s/n, Col. Bellavista, Gómez Palacio, Dgo.	5	State of Durango
Instituto Superior de Cultura y Arte de Monterrey/ISCAM/101	Av. San Jerónimo 201 Pte., Monterrey, N.L.	5	UANL
Instituto Superior de Educación Tecnológica Agropecuaria/ISETA	Apdo. Postal No. 508, Roque, Celaya, Gto.	3	SEP
Instituto Superior de Estudios Comerciales/739	Mier y Pesado No. 227, del Valle, México 12, D.F.	5	IPN/UNAM
Instituto Superior de Estudios Contables	*See* Instituto Superior de Estudios Comerciales.		
Instituto Superior del Valle de Atemajac/209	*See* Universidad del Valle de Atemajac.		
Instituto Superior de Turismo	Calle 2a, No. 2222, Chih., Chih.	5	Univ. Autónoma de Chihuahua
Instituto Superior de Turismo	Privada del Lago No. 40, Col. Américas Unidas, México 13, D.F.	5	SEP
Instituto Técnico Universitario del Norte/83	24 de Mayo No. 1803, Chihuahua, Chih.	5	Univ. Autónoma de Chihuihua/UNAM/State of Chihuahua
Instituto Tecnológico Agropecuario/ITA/de Ignacio de la Llave	Prol. Miguel Alemán s/n, Ignacio de la Llave, Ver.	3	SEP
ITA de la Mascota	Cuauhtémoc No. 89, Mascota, Jalisco	3	SEP
ITA No. 1 (de Durango)/279	Carretera Durango, La Ferrería Km. 7, Apdo. Postal 357, Durango, Dgo.	3	SEP
ITA No. 2 (de Mérida)/293	Apdo. Postal 53D, Mérida, Yuc.	3	SEP
ITA No. 3 (de Tuxtepec)/74	Apdo. Postal 29, San Bartolo, Tuxtepec, Oax.	3	SEP
ITA No. 4 (de Tampico)/124	Camino El Arenal s/n, Apdo. Postal 234, Tampico, Tamps.	3	SEP
ITA No. 5 (de Campeche)/107	Mpio. Sta. Catarina, Km. 19 Carretera Campeche-Mérida, Apdo. Postal 89, Campeche, Camp.	3	SEP

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ITA No. 6 (de Huejutla)/55	Km. 1 Huejutla a Chalahuiyapan, Apdo. Postal 78, Huejutla, Hgo.	3	SEP
ITA No. 7 (de La Huerta)/53	Alrate No. 827, Apdo. Postal 75 "B," La Huerta, Mich.	3	SEP
ITA No. 8 (de Comitancillo)/111	San Pedro Comitancillo, Mpio. Tehuantepec, Apdo. Postal 32, Ixtepec, Oax.	3	SEP
ITA No. 9 (de Xoxocotla)/167	Km. 85 Alpuyeca-Jojutla, Mpio. Puente de Ixtla, Apdo. Postal 84, Zacatepec, Mor.	3	SEP
ITA No. 10 (de La Partida)/154	Carretera a Torreón-La Partida Km. 14.5, Apdo. Postal 876, Torreón, Coah.	3	SEP
ITA No. 12 (de Linares)/43	Apdo. Postal 5, Ejido Emiliano Zapata, Linares, N.L.	3	SEP
ITA No. 13 (de Pinotepa Nacional)/37	Apdo. Postal 28, Pinotepa Nacional, Jamiltepec, Oax.	3	SEP
ITA No. 14 (de Cd. Obregón)	Block No. 611, Mpio. de Bácum, Sonora, Apdo. Postal 575, Cd. Obregón, Son.	3	SEP
ITA No. 16 (de Chetumal)/131	Av. Insurgentes s/n, Apdo. Postal 191, Chetumal, Q. Roo	3	SEP
ITA No. 18 (de Ursulo Galván)/50	Pípila s/n, Ursulo Galván, Ver.	3	SEP
ITA No. 19 (de Tizimín)/68	Km. 3.5 Col. Yuc., Apdo. Postal 77, Tizimín, Yuc.	3	SEP
ITA No. 20 (de Aguascalientes)	Villa Juárez Asientos, Apdo. Postal 769, Aguascalientes, Ags.	3	SEP
Instituto Tecnológico Autónomo de México/ITAM/1946/1,289*	Río Hondo No. 1, San Angel, México 20, D.F.	4	–
Instituto Tecnológico de Pesca	General Figueroa y Canal, Apdo. Postal 512, Veracruz, Ver.	3	SEP
Instituto Tecnológico de Sonora/1,763*	Blvd. P.E. Calles y Chihuahua, Apdo. Postal 541, Cd. Obregón, Son.	1	–
Instituto Tecnológico Forestal de El Salto No. 1/ITF	Mesa del Tecnológico s/n, Apdo. Postal 59, El Salto, Pueblo Nuevo, Dgo.	3	SEP
Instituto Tecnológico Mexicano/85	5 de Febrero No. 91 Piso 1, México 1, D.F.	5	SEP
Instituto Tecnológico Regional/ITR/de Acapulco/182	Carretera Puerto Marqués Km. 6.5, Apdo. Postal 600, Acapulco, Gro.	3	SEP
ITR de Aguascalientes/724*	Km. 1 Carretera a San Luis Potosí, Apdo. Postal 263, Aguascalientes, Ags.	3	SEP
ITR de Apizaco/301	Prol. Fco. I., Madero, Carretera a San Antonio Coaxamulco, Apdo. Postal 19, Apizaco, Tlax.	3	SEP

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ITR de Campeche/159	Calle de Querétaro, esq. Paraguay, Barrio de Santa Ana, Apdo. Postal 347, Campeche, Camp.	3	SEP
ITR de Celaya/1958/797*	Insurgentes e Irrigación, Apdo. Postal 57, Celaya, Gto.	3	SEP
ITR de Chetumal/143	Av. Andrés Q. Roo con Insurgentes, Apdo. Postal 267, Chetumal, Q. Roo	3	SEP
ITR de Chihuahua/1949/1,185	Av. Tecnológico s/n, Apdo. Postal 119, Chihuahua, Chih.	3	SEP
ITR de Cd. Guzmán/359*	Carretera al Fresnito s/n Km. 2, Apdo. Postal 150, Cd. Guzmán, Jal.	3	SEP
ITR de Cd. Juárez/1964/1,183	Km. 9 Carretera Panamericana, Apdo. Postal 1486, Cd. Juárez, Chih.	3	SEP
ITR de Cd. Madero/1,520*	Calle Primero de Mayo y Sor Juana Inés de la Cruz, Apdo. Postal 20, Cd. Madero, Tamps.	3	SEP
ITR de Cd. Victoria/310	Carretera Torres 22 y 23, Apdo. Postal 175, Cd. Victoria, Tamps.	3	SEP
ITR de Colima/194	Av. Tecnológico No. 1, Apdo. Postal 128, Colima, Col.	3	SEP
ITR de Culiacán/1968/497*	Av. Juan de Dios Bátiz s/n, Col. Guadalupe, Apdo. Postal 1273, Culiacán, Sin.	3	SEP
ITR de Durango/1948/1,115*	Bulevard Felipe Pescador No. 1830 Ote., Apdo. Postal 465, Durango, Dgo.	3	SEP
ITR de Hermosillo/154	Periférico Poniente y Carretera Bahía Kino, Apdo. Postal 518, Hermosillo, Son.	3	SEP
ITR de Jiquilpan/169	Av. Presidente Lázaro Cárdenas No. 366, Apdo. Postal 35, Jiquilpan de Juárez, Mich.	3	SEP
ITR de la Laguna/1965/1,355*	Blvd. Revolución y Calz. Cuauhtémoc s/n, Apdo. Postal 681, Torreón, Coah.	3	SEP
ITR de La Paz/230	Km. 3 Carretera Antiguo Aeropuerto, Apdo. Postal 243, La Paz, B.C. Sur	3	SEP
ITR de León/213	Carretera León-Silao, Apdo. Postal 857, León, Gto.	3	SEP
ITR del Istmo/264*	Km. 821 Carretera Panamericana, Apdo. Postal 63, Juchitán, Oax.	3	SEP
ITR de Los Mochis/394	Blvd. Jiquilpan y Prol. 20 de Noviembre, Apdo. Postal 766, Los Mochis, Sin.	3	SEP
ITR de Matamoros/601*	Km. 6 Playa Lauro Villar, Apdo. Postal 339, H. Matamoros, Tamps.	3	SEP

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ITR de Mérida/1961/1,249*	Carretera Mérida-Progreso Km. 5, Apdo. Postal 561, Mérida, Yuc.	3	SEP
ITR de Minatitlán/462	Carretera Transístmica Km. 277, Apdo. Postal 777, Minatitlán, Ver.	3	SEP
ITR de Morelia/1965/840*	Av. Tecnológico No. 1500, Apdo. Postal 262, Carretera Morelia-Salvatierra, Morelia, Mich.	3	SEP
ITR de Nogales/189	Calz. de los Nogales s/n, Apdo. Postal 796, Nogales, Son.	3	SEP
ITR de Nuevo Laredo/1964/363*	Av. Reforma No. 2007, Apdo. Postal 392, Nuevo Laredo, Tamps.	3	SEP
ITR de Nuevo León/146	Av. Eloy Cavazos s/n, Antiguo Camino a San Roque, Monterrey, N.L.	3	SEP
ITR de Oaxaca/1,043*	Calz. del Tecnológico y Wilfredo Massieu s/n, Oaxaca, Oax.	3	SEP
ITR de Orizaba/873*	Av. Instituto Tecnológico s/n, Apdo. Postal 324, Orizaba, Ver.	3	SEP
ITR de Pachuca/400*	Km. 81, Carretera México-Pachuca, Venta Prieta, Apdo. Postal 276, Pachuca, Hgo.	3	SEP
ITR de Parral/225	Km. 1364 Carretera Panamericana, Apdo. Postal 216, Parral, Chih.	3	SEP
ITR de Piedras Negras/211	Av. Tecnológico Prol. Pte. s/n, Apdo. Postal 15-B, Piedras Negras, Coah.	3	SEP
ITR de Puebla/629*	Av. Tecnológico No. 420, Apdo. Postal 1145, Puebla, Pue.	3	SEP
ITR de Querétaro/1967/586*	Av. Tecnológico y Gral M. Escobedo, Apdo. Postal 124, Querétaro, Qro.	3	SEP
ITR de Saltillo/560*	Entronque Carretera Monterrey y Piedras Negras, Apdo. Postal 600, Saltillo, Coah.	3	SEP
ITR de San Luis Potosí/560*	Km. 1 Carretera San Luis Potosí a Río Verde, Unidad Ponciano Arriaga, San Luis Potosí, S.L.P.	3	SEP
ITR de Tehuacán/240	Km. 3 Carretera Santa María Coapan, Apdo. Postal 247, Tehuacán, Pue.	3	SEP
ITR de Tepic/381	Km. 1.5 Carretera Tepic-Jalisco, Apdo. Postal 343, Tepic, Nay.	3	SEP
ITR de Tijuana/1971/534*	Calz. del Tecnológico s/n, Fracc. Tomás Aquino, Apdo. Postal 1166, Tijuana, B.C. Norte	3	SEP
ITR de Tlalnepantla/602*	Av. Tenayuca-Tlalnepantla s/n Apdo. Postal 750, Tlalnepantla, Edo. de México	3	SEP

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ITR de Toluca/489	Rancho La Virgen, Carretera a Metepec, Apdo. Postal 890, Toluca, Edo. de México	3	SEP
ITR de Tuxtepec/247	Calz. del Tecnológico s/n, Apdo. Postal 69, Col. 5 de Mayo, Tuxtepec, Oax.	3	SEP
ITR de Tuxtla Gutiérrez/229	Km. 1080 Carretera Panamericana, Apdo. Postal 599, Tuxtla Gutiérrez, Chis.	3	SEP
ITR de Veracruz/1,367*	Calz. de Circunvalación Norte, Apdo. Postal 539, Veracruz, Ver.	3	SEP
ITR de Villahermosa/497*	Carretera Frontera Km. 3, Apdo. Postal 424, Villahermosa, Tab.	3	SEP
ITR de Zacatecas/112	Av. Adolfo López Mateos s/n, Zacatecas, Zac.	3	SEP
ITR de Zacatepec/229*	Av. Tecnológico No. 27, Apdo. Postal 45, Zacatepec, Mor.	3	SEP
Instituto Tecnológico Superior de Gerencia Ejidal/81	Block No. 611, Valle del Yaqui, Son.	3	SEP
Instituto Tecnológico y de Estudios Superiores de Monterrey/ITESM/1944/7,571*	Av. Eugenio Garza Sada 2501, Sucursal de Correos "J," Monterrey, N.L.	4	–
—Extensión de la Unidad Ciudad de México	Matamoros y Nuevo León-Altos, Hermosillo, Sonora	4	–
—Extensión de la Unidad Ciudad de México	Calle 62 No. 411, Altos, Mérida, Yuc.	4	–
—Extensión de la Unidad Ciudad de México	Chapultepec Norte No. 20, Edificio de los Dos Pisos, Guadalajara, Jal.	4	–
—Unidad Chihuahua	Colegio Militar No. 2011, Nombre de Dios, Chih.	4	–
—Unidad Ciudad de México	Fray Servando Teresa de Mier No. 99, México 3, D.F.	4	–
—Unidad Estado de México/276	Cam. Lago de Guadalupe Km. 3½, Atizapán de Zaragoza, Edo. de México	4	–
—Unidad Irapuato	Villas de Irapuato, Apdo. Postal 568, Irapuato, Gto.	4	–
—Unidad Laguna/165	Río Grijalva No. 805, Col. Estrella, Apdo. Postal 506, Torreón, Coah.	4	–
—Unidad León	Chiapas Lateral Sur 1106, Col. Arbide, León, Gto.	4	–
—Unidad Noroeste-Guaymas/798	Bahía Bacochibampo s/n, Apdo. Postal 484, Guaymas, Son.	4	–
—Unidad Noroeste-Obregón	Dr. Norman E. Borlaug s/n, Apdo. Postal 662, Cd. Obregón, Son.	4	–

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—Unidad Querétaro/538	Henry Ford No. 10, Parques Industriales, Apdo. Postal 37, Querétaro, Qro.	4	–
—Unidad Saltillo	Prol. Juan de la Barrera No. 1241 Ote., Apdo. Postal 539, Saltillo, Coah.	4	–
—Unidad San Luis Potosí	Cacamatzín s/n, Fracc. Jacarandas, Apdo. Postal 631, Sur Correos "E," San Luis Potosí, S.L.P.	4	–
Instituto Tecnológico y de Estudios Superiores de Occidente/ITESO/1957/1,794	Av. Niños Héroes No. 1342-8, Guadalajara, Jal.	5	SEP
Instituto Tecnológico y de Estudios Superiores Potosino/1967/214	Madero No. 335, Apdo. Postal 743, San Luis Potosí, S.L.P.	5	UNAM/SEP
Instituto Universitario de Ciencias de la Educación, A.C./159	Calle Colegio Salesiano No. 35, Col. Anáhuac, México 17, D.F.	5	UNAM/SEP
Taller Nacional de Tapiz	Ex-Convento de la Merced, Uruguay No. 170, México 1, D.F.	3	SEP/INBA
Tecnológico de Estudios Contables y Administrativos/TECA/109	Viaducto Pte. Miguel Alemán No. 225, Col. Roma Sur, México 17, D.F.	5	SEP
Tecnológico Universitario de México	—	5	UNAM
Universidad Anáhuac/1964/2,945	Lomas de Anáhuac, Apdo. Postal 10-844, México 10, D.F.	5	UNAM/SEP Universidad del Edo. de México
Universidad Autónoma Agraria "Antonio Narro"/1,994	Buena Vista, Saltillo, Coah.	1	–
Universidad Autónoma Benito Juárez de Oaxaca/1827, 1955/2,122*	Av. Independencia y M. Alcalá, Edificio Labastida 646-86, Apdo. Postal 76, Oaxaca, Oax.	1	–
Universidad Autónoma de Chapingo/1,671*	Chapingo, Edo. de México		
Universidad Autónoma de Aguascalientes/1867, 1974/1,507*	Jardín del Estudiante No. 1, Aguascalientes, Ags.	1	–
Universidad Autónoma de Baja California/9,280*	Antiguo Palacio de Gobierno, Av. Obregón y Calle F, Mexicali, B.C. Nte.	1	–
Universidad Autónoma de Baja California Sur/1975/408	Ciudad Universitaria, Km. 5 Carretera al Sur, La Paz, B.C. Sur	1	–
Universidad Autónoma de Chapingo/1,671	Chapingo, Edo. de México	1	–
Universidad Autónoma de Chiapas/1975/2,168*	2a Poniente Sur, No. 118, Piso 5, Tuxtla Gutiérrez, Chis.	1	–

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Universidad Autónoma de Chihuahua/1954/8,329*	Calle Escorza y Vicente Guerrero, Chihuahua, Chih.	1	–
Universidad Autónoma de Ciudad Juárez/UACJ/1973/2,808*	Av. López Mateos No. 20, Circuito Pronaf., Apdo. Postal 1594-D, Cd. Juárez, Chih.	1	–
Universidad Autónoma de Coahuila/1867, 1957/7,882*	Blvd. Constitución y Durango, Apdo. Postal 308, Saltillo, Coah.	1	–
Universidad Autónoma de Guadalajara/UAG/1935/15,047	Av. La Patria No. 1201, 3a Sección Lomas del Valle, Guadalajara, Jal.	5	UNAM
Universidad Autónoma de Guerrero/1869/3,219*	Av. Juárez No. 14, Chilpancingo, Gro.	1	–
Universidad Autónoma de Hidalgo/1869/2,171*	Abasolo No. 600, Pachuca, Hgo.	1	–
Universidad Autónoma del Carmen	Av. Aviación y Av. López Mateos, Cd. del Carmen, Camp.	1	–
Universidad Autónoma del Edo. de México/1828, 1956/10,648*	Av. Constituyentes No. 100 Ote., Toluca, Edo. de México	1	–
Universidad Autónoma del Edo. de Morelos/1939/3,868*	Av. Universidad No. 1001, Cuernavaca, Mor.	1	–
Universidad Autónoma del Noreste/621	Monclova No. 1561, Col. República, Saltillo, Coah.	5	State of Coahuila
Universidad Autónoma del Norte	*See* Universidad del Norte.		
Universidad Autónoma del Sureste de Oaxaca, A.C.	Prol. 20 de Noviembre s/n, Col. Alemán, Apdo. Postal 483, Oaxaca, Oax.	5	State of Oaxaca
Universidad Autónoma de Nayarit/1925, 1969/3,691*	Ciudad de la Cultura, Amado Nervo, Tepic, Nay.	1	–
Universidad Autónoma de Nuevo León/UANL/1857, 1933/32,887*	Ciudad Universitaria, Monterrey, N.L.	1	–
Universidad Autónoma de Puebla/1937/18,204*	4 Sur No. 104, Puebla, Pue.	1	–
Universidad Autónoma de Querétaro/1775, 1951/1,617*	Centro Universitario, Cerro de Campanas, Querétaro, Qro.	1	–
Universidad Autónoma de San Luis Potosí/1859, 1923/10,197*	Alvaro Obregón No. 64, San Luis Potosí, S.L.P.	1	–
Universidad Autónoma de Sinaloa/1873, 1922/17,824*	Angel Flores s/n, Culiacán, Sin.	1	–
Universidad Autónoma de Tamaulipas/1956/10,553*	Calle Matamoros No. 8, Cd. Victoria, Tamps.	1	–
Universidad Autónoma de Tlaxcala/1976/1,140*	Carretera Pueblo-Tlaxcala entronque San Damián Texoloc, Tlaxcala de X., Tlax.	1	–
Universidad Autónoma de Zacatecas/1834, 1968/4,126*	Galeana No. 1, Zacatecas, Zac.	1	–

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Universidad Autónoma "Juárez" de Tabasco/1879, 1958/2,887*	Zona de la Cultura, Villahermosa, Tab.	1	–
Universidad Autónoma Metropolitana/UAM/1973/ 10,065*	—	1	–
—Unidad Azcapotzalco	Av. San Pablo s/n, Azcapotzalco, México, D.F.		
—Unidad Iztapalapa	Av. Michoacán y Purísima México 13, D.F.		
—Unidad Xochimilco	Calz. del Hueso y Canal Nacional s/n, Xochimilco, México, D.F.		
Universidad Azteca	Av. Chapultepec 246-101, México, D.F.	5	UNAM
Universidad Chapultepec	Chihuahua No. 156, Desp. 106, Col. Roma, México, D.F.	5	SEP
Universidad Cuauhtémoc	Jalapa y Tlacomulco, Colonia La Paz, Puebla, Pue.	5	SEP
Universidad de Colima/1867/ 1,168*	Av. Universidad No. 333, Colima, Col.	2	–
Universidad de Guadalajara/ UG/1791/47,392*	Av. Juárez No. 975, Guadalajara, Jal.	2	–
Universidad de Guanajuato/ 1732, 1828/3,554*	Lascuráin de Retana No. 5, Guanajuato, Gto.	2	–
Universidad de la Comunicación	Citlatépetl No. 11, Col. Condesa, México 11, D.F.	5	SEP
Universidad del Altiplano de México/600	Pedro Moreno No. 1431, Guadalajara, Jal.	5	SEP
Universidad de las Américas, A.C./1940/875	Cholula, Pue., Apdo. Postal 100, Sta. Catarina Mártir, Puebla	5	State of Puebla
Universidad del Bajío/705	Falda del Cerro Gordo, Apdo. Postal 444, Col. Panorama, León, Gto.	5	Univ. of Guanajuato
Universidad del Ejército y Fuerza Aérea/590	Popotla (Antiguo H. Colegio Militar), México 17, D.F.	3	SDN
Universidad del Golfo/100	Roble No. 104, Col. Aguila, Tampico, Tamps.	5	UNAM/SEP
Universidad del Noreste/1,418	Prol. Av. Hidalgo s/n, 5 Km. 137, Apdo. Postal 469, Tampico, Tamps.	5	UNAM
Universidad del Norte/159	Cuauhtémoc Sur No. 985, Monterrey, N.L.	5	State of Nuevo León
Universidad del Nuevo Mundo	Bosque de Moctezuma No. 124, Fracc. La Herradura, Edo. de México	5	UNAM
Universidad del Occidente	—	5	SEP
Universidad del Pacífico/70	Angel Flores No. 101, Mazatlán, Sin.	5	SEP

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Universidad del Sudeste/1756, 1957/874*	Ciudad Universitaria Campeche, Camp.	1	–
Universidad del Tepeyac/279	Callao No. 842, Col. Lindavista, México, D.F.	5	UNAM/SEP
Universidad del Valle de Atemajac	Av. López Mateos Sur y Rincón de los Ahuehuetes No. 1988, Costado Norte de la Plaza del Sol, Guadalajara, Jalisco	5	SEP
Universidad del Valle de México/1960, 1961/3,847	Sadi Carnot No. 57, Col. San Rafael, México, D.F.	5	UNAM/SEP
Universidad del Valle de Toluca	Ex-Hacienda de Santa Cruz de los Patos, Zinacantepec, Edo. de México	5	State of Mexico
Universidad de Montemorelos/344	Apdo. Postal 16, Montemorelos, N.L.	5	State of Nuevo León
Universidad de Monterrey/ 1969/1,865*	Av. Gonzalitos No. 250 Sur, Apdo. Postal 442, Sucursal "H," Monterrey, N.L.	5	State of Nuevo León
Universidad de Sonora/1938/ 7,192*	Campos de la Universidad, Hermosillo, Son.	1	–
Universidad de Yucatán/1624, 1922/5,336*	Calle 60 X 57, Mérida, Yuc.	1	–
Universidad Femenina de México/1943/225	Av. Constituyentes No. 151, Col. San Miguel Chapultepec, México 18, D.F.	5	UNAM/SEP
Universidad Femenina de Veracruz	Balboa 524 entre Martí e Isabel la Católica, Veracruz, Ver.	5	Univ. Veracruzana
Universidad Hispanoamericana	Av. Morelos No. 220, Col. Jardines del Moral, León, Gto.	5	Univ. de Guanajuato
Universidad Hispano-Mexicana/110	Emilio Castelar No. 63, esq. Eugenio Sue, Col. Polanco, México 5, D.F.	5	UNAM/SEP
Universidad Iberoamericana/ 1943/6,803*	Av. Cerro de las Torres No. 395, Col. Campestre Churubusco, México 21, D.F.	5	SEP
Universidad Intercontinental/ 493	Insurgentes Sur No. 4133, México, D.F.	5	UNAM/SEP
Universidad Juárez del Estado de Durango/1856, 1957/5,124*	Constitución No. 404 Sur, Durango, Dgo.	1	–
Universidad La Salle, A.C./ 1962/4,363	Benjamín Franklin No. 47, México 18, D.F.	5	UNAM/SEP
Universidad Lasallista Benavente	Prol. Tenochtitlán s/n, Celaya, Gto.	5	UNAM/SEP
Universidad Latina, A.C./207	Chihuahua No. 202, México 7, D.F.	5	UNAM
Universidad Latinoamericana, S.C./412	Amores No. 1360, del Valle, México 12, D.F.	5	UNAM
Universidad Mexicana del Noreste/241	Quinta Zona No. 409, Apdo. Postal 2191 "J," Col. Caracol, Monterrey, N.L.	5	State of Nuevo León

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Universidad Michoacana de San Nicolás de Hidalgo/1847, 1917/17,259*	Santiago Tapia No. 403, Morelia, Mich.	1	–
Universidad Motolinia, A.C./ 1918, 1944/92	Cerrada de Ameyalco No. 227, del Valle, México 12, D.F.	5	UNAM/SEP
Universidad Nacional Autónoma de México/UNAM/ 1551, 1910*†	Ciudad Universitaria, México 20, D.F.	1	–
—Escuela Nacional de Estudios Profesionales-Aragón/ENEP-Aragón†	Av. 529 No. 33, Col. Aragón, México 14, D.F.		
—Escuela Nacional de Estudios Profesionales-Zaragoza/ENEP-Zaragoza†	J.C. Bonilla No. 66, Col. Ejército de Oriente, México 9, D.F.		
—Escuela Nacional de Estudios Profesionales-Cuautitlán/ENEP-Cuautitlán‡	Conjunto No. 1, Apdo. Postal 25, Administración de Correos Cuautitlán, Izcalli, Edo. de México		
—Escuela Nacional de Estudios Profesionales-Iztacala/ENEP-Iztacala‡	San Juan Iztacala, Fracc. Los Reyes, Apdo. Postal 314, Administración de Correos Tlalnepantla, Edo. de México		
—Escuela Nacional de Estudios Profesionales-Acatlán/ENEP-Acatlán‡	Avenida Alcanfor y San Juan Totoltepec, San Mateo Naucalpan, Edo. de México		
Universidad Panamericana/ 377	Augusto Rodin No. 498, Col. Mixcoac, México 19, D.F.	5	UNAM
Universidad Pedagógica Nacional/UPN/1978	Plaza Miravalle No. 2, Col. Roma, México 7, D.F.	3	SEP
Universidad Popular Autónoma del Estado de Puebla/2,506	Edificio Central, 9 Poniente No. 1508, Puebla, Pue.	5	State of Puebla
Universidad Regiomontana/ 1951, 1969/3,282*	Padre Mier Pte. No. 447, Monterrey, N.L.	5	State of Nuevo León
Universidad Regional del Sureste	Prol. 20 de Noviembre s/n, Col. Alemán, Apdo. Postal 483, Oaxaca, Oax.	5	State of Oaxaca
Universidad Tecnológica de México/1966/1,689	Av. Marina Nacional No. 162, Apdo. Postal 5-013, México 17, D.F.	5	UNAM/SEP
Universidad Valle del Bravo	Avila Camacho No. 1735, Col. del Prado, Cd. Reynosa, Tamps.	5	State of Tamaulipas
Universidad Veracruzana/ 1944/27,927*	Zona Universitaria, Lomas del Estado, Jalapa, Ver.	2	–
Universidad Villa Rica/666	Av. Díaz Mirón 2242, Veracruz, Ver.	5	UNAM

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†UNAM enrollment in the Distrito Federal (D.F.) totalled 116,556.
‡UNAM enrollment in the Estado de México totalled 32,000.

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Appendix D

Documents

SECRETARIA DE EDUCACION PUBLICA

DIRECCION GENERAL DE EDUCACION TECNOLOGICA INDUSTRIAL

LA DIRECCION DE LA ESCUELA

ETI NUM 41 — CLAVE 2009668

NOMBRE — CURP LIVA560416

CURSO LAS MATERIAS DEL

CICLO DE EDUCACION SECUNDARIA

QUE A CONTINUACION SE EXPRESAN CON LAS CALIFICACIONES FINALES SIGUIENTES

SEP

PROMEDIO GENERAL DE APROVECHAMIENTO 8.6

111599

EN CUMPLIMIENTO DE LAS PRESCRIPCIONES LEGALES SE EXPIDE EL PRESENTE CERTIFICADO QUE AMPARA CUARENTA

MATERIAS APROBADAS DE EDUCACIÓN SECUNDARIA EN SAN JUAN BAUTISTA TUXTEPEC OAXACA

A LOS SIETE DIAS DEL MES DE JULIO DE SETENTA Y TRES

EL DIRECTOR DE LA ESCUELA

RODRIGO BRAVO TORRA

FIRMA

No. 1 a. Certificate of Completion of *Secundaria Técnica*, Issued by the SEP
(continued)

NOTE: On document 1 a, "ETI NUM 41" indicates that this document is from the *Escuela Técnica* Industria Number 41. See also "449 449 449" which corresponds to the vocational specialization, in this case welding and forging. On document 1b, the grading system is marked by an asterisk.

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No. 1 b. Reverse of 1 a.

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No. 2. Certificate of Completion of the ENP *Bachillerato* Program, UNAM

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UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO

CERTIFICADO NUMERO 00009620

ESCUELA NACIONAL PREPARATORIA

CERTIFICADO Que según los registros que existen en el Archivo de esta Escuela

La Universidad Autónoma de Guadalajara de Guadalajara, Jal.,

con estudios incorporados a esta Institución, las siguientes asignaturas que cubrió total-mente el Plan de estudios del Bachillerato vigente del Colegio de Ciencias y Humanidades de esta Universidad:

NUM.	AÑO	ASIGNATURAS	TIPO EXAM.	CALIFICACIONES
		PRIMER SEMESTRE		
1.-	1976	Matemáticas I	ORD.	S (SUFICIENTE)
2.-	1976	Física I	"	S (SUFICIENTE)
3.-		Historia Universal Moderna y Contemporánea I	"	S (SUFICIENTE)
4.-		Taller de Redacción I	"	B (BIEN)
5.-		Taller de Lectura de Clásicos Universales	"	S (SUFICIENTE)
6.-		Inglés I	"	S (SUFICIENTE)
		SEGUNDO SEMESTRE		
7.-		Matemáticas II	"	S (SUFICIENTE)
8.-		Química I	"	S (SUFICIENTE)
9.-		Historia de México I	"	S (SUFICIENTE)
10.-		Taller de Redacción II	"	B (BIEN)
11.-		Taller de Lectura de Clásicos Españoles e Hispanoamericanos	"	B (BIEN)
12.-		Inglés II	"	S (SUFICIENTE)
		TERCER SEMESTRE		
13.-	1979	Matemáticas III	"	S (SUFICIENTE)
14.-	1976	Biología I	"	S (SUFICIENTE)
15.-		Historia de México II	"	S (BIEN)
16.-		Taller de Redacción e Investigación Documental I	"	S (SUFICIENTE)
17.-		Taller de Lectura de Autores Modernos Universales	"	B (BIEN)
18.-		Inglés III	"	S (SUFICIENTE)
		CUARTO SEMESTRE		
19.-	1977	Matemáticas IV	"	S (SUFICIENTE)
20.-	1975	Método Experimental: Física, Química y Biología	"	B (BIEN)
21.-	1976	Teoría de la Historia	"	B (BIEN)
22.-		Taller de Redacción e Investigación Documental II	"	B (BIEN)
23.-		Taller de Lectura de Autores Modernos Españoles e Hispanoamericanos	"	S (SUFICIENTE)
24.-		Inglés IV	"	B (BIEN)
		QUINTO SEMESTRE		
25.-	1977	Lógica I	"	S (SUFICIENTE)
26.-		Biología II	"	B (BIEN)
27.-		Filosofía I	"	S (SUFICIENTE)
28.-		Ciencias Pol. y Soc. I	"	S (SUFICIENTE)
29.-		Derecho I	"	S (SUFICIENTE)
30.-		Ciencia de la Comunicación	"	MB (MUY BIEN)
		SEXTO SEMESTRE		
31.-		Lógica II	"	S (SUFICIENTE)
32.-		Biología III	"	S (SUFICIENTE)
33.-		Filosofía II	"	S (SUFICIENTE)
34.-		Ciencias Pol. y Soc. II	"	MB (MUY BIEN)
35.-		Derecho II	"	MB (MUY BIEN)
36.-		Ciencia de la Comunicación	"	B (BIEN)

NOTA: ESTE CERTIFICADO AMPARA TREINTA Y SEIS ASIGNATURAS

ESCALA DE CALIFICACIONES POR LETRAS: MB (Muy Bien), B (Bien), S (Suficiente)

Y para que así conste, firmo el presente en la Ciudad Universitaria, Distrito Federal, a los veintitrés días del mes de noviembre de mil novecientos ochenta.

EL DIRECTOR GENERAL

Nº 867

No. 3. Certificate of Completion of the CCH *Bachillerato* Program, UNAM

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APPENDIX D

SECRETARIA DE EDUCACION PUBLICA
DIRECCION GENERAL DE PUBLICACIONES Y BIBLIOTECAS

La Comisión Nacional de Biblioteconomía y Documentación, CERTIFICA que, según constancias que obran en el archivo de esta Dirección, el señor ___ cursó y acreditó los estudios del Plan de estudios de BACHILLERATO TECNICO EN BIBLIOTECONOMIA, que fue autorizado a impartirse, con los programas anexos que se acompañan.

MATERIAS	AÑO ESCOLAR	ESCALA FINAL NUMERO	ESCALA FINAL LETRA	OBSERVACIONES
Matemáticas I	1976	8	OCHO	
Taller de Lect.y Redacción I	"	9	NUEVE	
Idioma Extranjero I	"	10	DIEZ	
Información Tecnológica	"	10	DIEZ	
Manejo de Máquinas de Of. I	"	10	DIEZ	
Problemas Mal&gicos	1977	9	NUEVE	
Relaciones Humanas	1976	7	SIETE	
Matemáticas II	1977	9	NUEVE	
Taller de Lect.y Redacción II	1976	8	OCHO	
Idioma Extranjero II		8	OCHO	EX. REG.3-12-76
Cálculos Merc.y Financieros	1977	8	OCHO	
Manejo de Máquinas de Of.II	"	8	OCHO	
Psicología General	1976	9	NUEVE	
Fundamentos y Tecn.de la Bi - blioteconomía	"	10	DIEZ	
Matemáticas III	1977	9	NUEVE	
Redacción y Estilo	"	9	NUEVE	
Historia Contemporánea	1976	8	OCHO	
Contabilidad I	1978	10	DIEZ	
Elementos de Catalogación	1976	9	NUEVE	
Servicio a los Lectores I	1977	10	DIEZ	
Actividades Extraescolares	1978	9	NUEVE	
Estadística	"	10	DIEZ	
Administración I	1977	9	NUEVE	
Problm.Sociocc.de México	"	10	DIEZ	
Contabilidad II	1978	10	DIEZ	
Elementos de Clasificación	1977	10	DIEZ	
Servicio a los Lectores II		8	OCHO	
Filosofía I	1978	8	OCHO	
Administración II	1977	7	SIETE	
Economía I	"	10	DIEZ	
Practs.Comerc.y de Archivo	1978	10	DIEZ	
Encabezamientos de Materia	1977	10	DIEZ	
Derecho I	"	8	OCHO	
Introduc.a la Bibliografía	1976	9	NUEVE	
Filosofía II	1978	9	NUEVE	
Economía II	"	9	NUEVE	
Organización de Oficinas	"	9	NUEVE	
Publicaciones Periódicas	"	10	DIEZ	
Derecho II	"	9	NUEVE	
Acquisición de Mat.Documental	"	9	NUEVE	

No. 4. Certificate of Completion of ENBA's *Bachillerato Técnico en Biblioteconomía*

SECRETARIA DE EDUCACION PUBLICA
INSTITUTO POLITECNICO NACIONAL
ESCUELA VOCACIONAL NUM. ___

MATERIAS	AÑO ESCOLAR	ESCALA FINAL NUMERO	OBSERVACIONES
PRIMER AÑO			
MATEMATICAS I	1973	6.00	E.F.O. 16/VIII
FISICA I	1973	6.00	E.F.O. 18/II
QUIMICA I	1973	7.00	E.F.O. 27/II
BIOLOGIA	1973	6.00	
LENGUA Y LITERATURA	1973	8.25	
LENGUA EXTRANJERA I			
DIBUJO TECNICO I	1973	5.00	
TECNOLOGIA I	1973	6.75	
TALLER I Elect.	1973	7.00	
SEGUNDO AÑO			
MATEMATICAS II	1973	6.00	E.F.O. 1/X
FISICA II	1973	6.25	
QUIMICA II	1973	6.00	E.F.O. 16/X
HISTORIA DE LA CULTURA	1973	6.00	
INTRODUCCION A LA FILOSOFIA	1973	7.00	
LENGUA EXTRANJERA II	1973	9.00	E.F.O. 19/VIII
DIBUJO TECNICO II	1973	6.00	
TECNOLOGIA II	1973	6.50	
TALLER II Automotriz	1973	8.00	

QUE AMPARA [illegible] FISICO MATEMATICAS en la Ciudad de [illegible] D.F.

Plan de 4 años 3 de Vocacional y 1 de Técnico

No. 5. Certificate of Completion of IPN's Two-Year *Vocacional* Program

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SECRETARIA DE EDUCACION PUBLICA

INSTITUTO POLITECNICO NACIONAL

CENTRO DE ESTUDIOS CIENTIFICOS Y TECNOLOGICOS

CIENCIAS SOCIALES

TECNICO FISCAL

No. 7. Certificate of Completion of the CECYT of IPN.

INSTITUTO POLITECNICO NACIONAL

CENTRO DE ESTUDIOS CIENTIFICOS Y TECNOLOGICOS

"WILFRIDO MASSIEU"

No. 6. Certificate of Completion of IPN's One-Year Technical Program Following *Vocacional*

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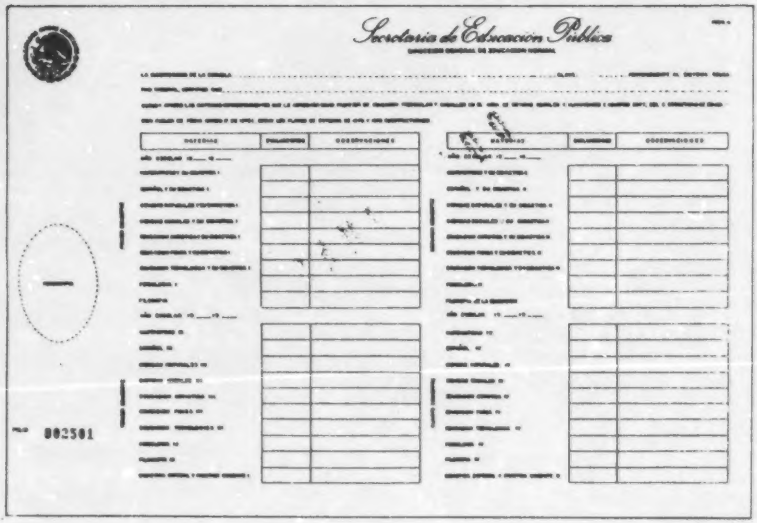

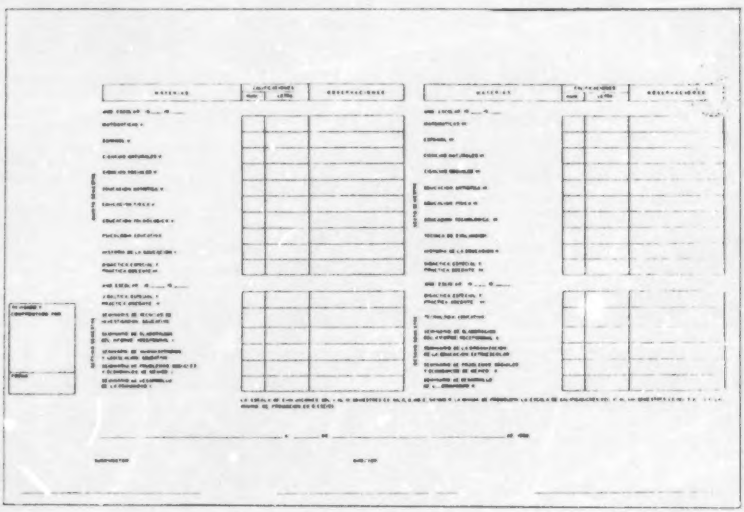

No. 8 a & b. Certificate of Completion of the *Bachillerato* and *Profesor de Educación Pre-Escolar* Program
(front and reverse sides)

268
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SECRETARIA DE EDUCACION PUBLICA

DIRECCION GENERAL DE EDUCACION FISICA

ESCUELA NACIONAL DE EDUCACION FISICA

CERTIFICADO DE ESTUDIOS

SECRETARIA DE EDUCACION PUBLICA

Los suscritos, Director y Subdirector Secretario, respectivamente, de la Escuela Nacional de Educación Física, dependiente de la Dirección General de Educación Física de la Secretaría de Educación Pública, CERTIFICAN: que en los registros que obran en el Archivo de la Secretaría del Plantel, aparece que el alumno ..... cursó y aprobó durante los años escolares de 19 67 19 68 y 19 69/70 las materias que forman el Plan de Estudios para la carrera de *Profesor de Educación Física* que a continuación se expresan y mereció las calificaciones y reconocimientos reglamentarios, habiendo resultado aprobado en ellas con las calificaciones que se indican:

PRIMER AÑO	Año escolar	CALIFICACION Núm.	Letra	OBSERVACIONES
Anatomía	1967	7.-	SIETE.-	
Ciencia de la Educación	"	8.-	SEIS.-7.8.-10-IX-1969.-	
Fisiología General	"	8.-	OCHO.-7.8.-27-II-1971.-	
Historia de la Educación Física	"	6.5	SEIS 5/10.-	
Inglés I	"	6.-	SEIS.-7.8.-21-III-1968.-	
Psicología	"	7.5	SIETE 5/10.-7.8.-4-X-1971.-	
Ritmica y Técnica Naturales y Cotas	"	6.-	SEIS.-	
Sociología	"	8.5	SEIS 5/10.-7.8.-27-IX-1921.-	
Ejercicios Militares (B)	"	7.-	SIETE.-	
Gimnasia I	"	8.5	OCHO 5/10.-	
Juegos Organizados	"	6.5	SEIS 5/10.-7.8.-11-IX-1969.-	
Natación (B) I	"	9.5	NUEVE 5/10.-EXT.-30-VI-1967.-	
S.Abat (B)	"	6.5	SEIS 5/10.-EXT.-29-VI-1967.-	
Basket (B)	"	8.-	OCHO.-	
Voleibol	"	8.-	OCHO.-	
Baseball	"	7.5	SIETE 5/10.-	
Futbol I	"	8.-	OCHO.-	
Rastreo	"	7.2	SIETE 7/10.-	
SEGUNDO AÑO				
Fisiología Especial y del Ejercicio	1968	8.-	OCHO.-7.8.-22-II-1969.-	
Cinesiología (B)	"	6.-	SEIS.-	
Adiestramiento (B)	"	7.-	SIETE.-	
Higiene y Profilaxia	"	7.-	SIETE.-7.8.-11-II-1969.-	
Conocimiento del Niño y del Adolescente	"	6.-	SEIS.-7.8.-12-II-1969.-	
Tecn. de la Enseñ. de la Ed. Física I	"	8.-	OCHO.-7.8.-22-II-1969.-	
Inglés 2 Curso	"	6.-	SEIS.-7.8.-11-II-1969.-	
Recreación	"	8.-	OCHO.-7.8.-19-VIII-1970.-	
Gimnasia 2	"	8.-	OCHO.-7.8.-22-II-1969.-	
Atletismo 1	"	8.-	OCHO.-7.8.-22-II-1969.-	
Natación 2	"	6.5	SEIS 5/10.-	
Basquetbol II	"	8.5	OCHO 5/10.-7.8.-22-II-1969.-	
Futbol 2	"	7.2	SIETE 7/10.-	
Beisbol 2	"	7.-	SIETE.-	
Primeros, Tenis y Natación	"	7.2	SIETE 2/10.-	
TERCER AÑO	1969-70			
Prevenc. y Trat. de Lesiones Deportivas	"	6.-	SEIS.-7.8.-10-IX-1969.-	
Fisioterapia (B)	"	6.-	SEIS.-	
Mantenimiento (B)	"	6.-	SEIS.-7.8.-11-IX-1969.-	
Indices Fisicos y Pruebas Funcionales	"	6.-	OCHO.-7.8.-12-IX-1969.-	
Tecn. de Enseñanza de Ed. Física 2	"	7.5	SIETE 5/10.-7.8.-12-IX-1969.-	
Organ. Admin. y Admin. de Ed. Física	"	6.-	SEIS.-7.8.-12-IX-1969.-	
Atletismo 2	"	8.-	OCHO.-7.8.-19-IX-1969.-	
Natación 3	"	8.-	OCHO.-7.8.-12-IX-1969.-	
Basquetbol 2	"	7.5	SIETE 5/10.-7.8.-12-IX-1969.-	
Esgrima	"	6.-	SEIS.-7.8.-18-IX-1969.-	
Futbol Americano	"	7.-	SIETE.-7.8.-11-IX-1969.-	
Rugby	"	6.-	SEIS.-7.8.-18-IX-1969.-	
Lucha	"	7.5	SIETE 5/10.-7.8.-11-IX-1969.-	

Escala de Calificaciones: de 0 a 10 (cero a diez), siendo 6 (seis) la calificación mínima aprobatoria y la mayor de paso es 9 (nueve). Este certificado es nulo si lleva raspaduras o enmendaduras.

D. F., a 9 de OCTUBRE de 19 7[illegible]

El Director El Subdirector Secretario

PROFR. FRANCISCO DUARTE CHESSAL TEVERINO. PROFR. ENRIQUE RAMIREZ MONTEMAR.

DIRECCION

Vo. Bo.

El Director General de Educación Física

PROFR. Y LIC. DAVID JUAREZ MIRANDA.

ESCUELA NACIONAL DE EDUCACION FISICA DIRECCION

No. 9. Certificate of Completion of *Profesor de Educación Física* Program

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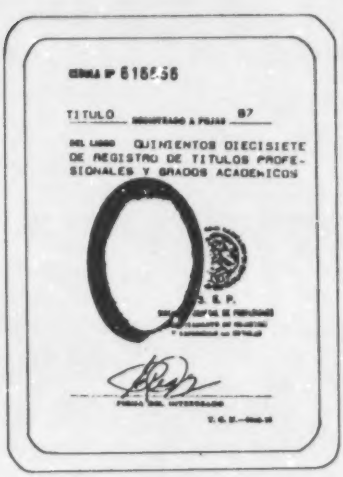


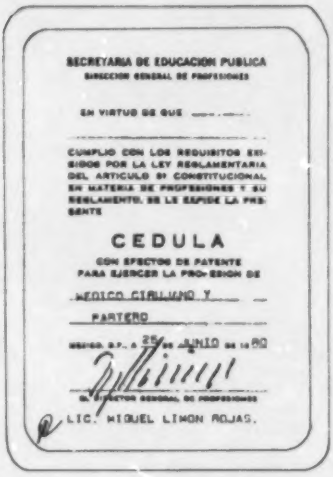
CEDULA Nº 616556

TITULO REGISTRADO A FOJAS 87

DEL LIBRO QUINIENTOS DIECISIETE DE REGISTRO DE TITULOS PROFESIONALES Y GRADOS ACADEMICOS

S. E. P.

FIRMA DEL INTERESADO



SECRETARIA DE EDUCACION PUBLICA

DIRECCION GENERAL DE PROFESIONES

EN VIRTUD DE QUE

CUMPLIO CON LOS REQUISITOS EXIGIDOS POR LA LEY REGLAMENTARIA DEL ARTICULO 5º CONSTITUCIONAL EN MATERIA DE PROFESIONES Y SU REGLAMENTO, SE LE EXPIDE LA PRESENTE

CEDULA

CON EFECTOS DE PATENTE PARA EJERCER LA PROFESION DE

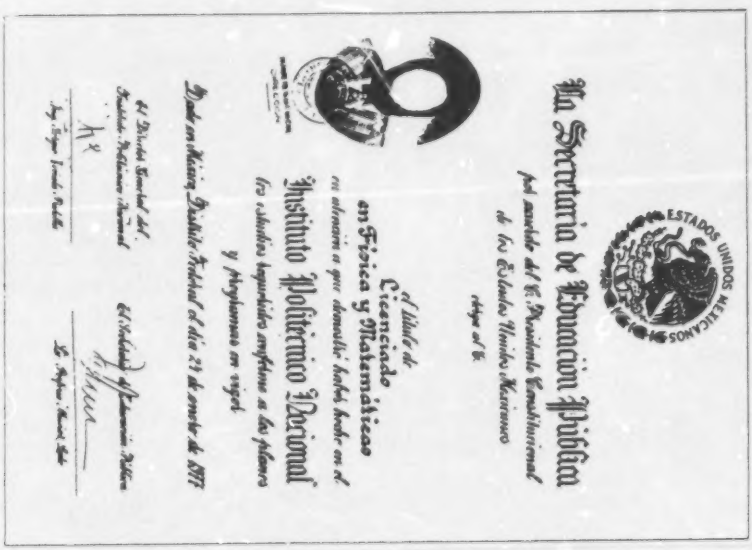
MEDICO CIRUJANO Y PARTERO

MEXICO, D.F., A 25 DE JUNIO DE 1980

EL DIRECTOR GENERAL DE PROFESIONES

LIC. MIGUEL LIMON ROJAS.

No. 10 a & b. *Cédula* issued by General Directorate of Professions, SEP
(front and reverse sides)



La Secretaría de Educación Pública

por acuerdo del C. Presidente Constitucional de los Estados Unidos Mexicanos

otorga al C.

el título de

Licenciado en Física y Matemáticas

en atención a que demostró haber sido hecho en el Instituto Politécnico Nacional los estudios requeridos conforme a los planes y programas en vigor

Dado en Mexico, Distrito Federal el día 21 de enero de 1977

El Director General de Profesiones

El Director General del Instituto Politécnico Nacional

ESTADOS UNIDOS MEXICANOS

No. 11. *Título* (Degree) of the *Licenciado* in Physics and Mathematics

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Universidad Autónoma de Guadalajara

A quien corresponda:

El que suscribe, Secretario General de la Universidad Autónoma de Guadalajara, con estudios incorporados a la Universidad Nacional Autónoma de México hace constar que

terminó los estudios correspondientes a la carrera de Licenciado en Administración de Empresas, en la Facultad de Administración Comercio y Economía

dependiente de esta Institución, considerándosele actualmente como PASANTE.

A petición del interesado y para los fines legales que haya lugar, se extiende la presente en la ciudad de Guadalajara, Jal., a los [illegible] días del mes de Junio de mil novecientos ochenta

"Ciencia y Libertad"

El Secretario General
Lic. Carlos Pérez Vizcaíno

Cotejo

Ing. Raúl Ontiveros H.
Director Gral. Servicios Escolares

No. 13. *Carta de Pasante* Resembling a *Título*

No. 12. *Carta de Pasante*

UNIVERSIDAD AUTONOMA DE GUADALAJARA

A QUIEN CORRESPONDA:

El que suscribe, Secretario General de la Universidad Autónoma de Guadalajara, con estudios incorporados a la Universidad Nacional Autónoma de México, hace constar que la Srita.

, terminó los estudios correspondientes a la carrera de LICENCIADA EN ADMINISTRACION DE EMPRESAS en la Escuela de ADMON. CONT. Y ECONOMIA dependiente de esta institución, considerándosele actualmente como PASANTE.

A petición de la interesada y para los fines legales a que haya lugar, se extiende la presente en la ciudad de Guadalajara, Jalisco, a los diez días del mes de octubre mil novecientos ochenta.

" CIENCIA Y LIBERTAD "

EL SECRETARIO GENERAL.

LIC. CARLOS PEREZ VIZCAINO.

DIRECTOR DE SERVICIOS ESCOLARES.

ING. LUIS ONTIVEROS HERNANDEZ.

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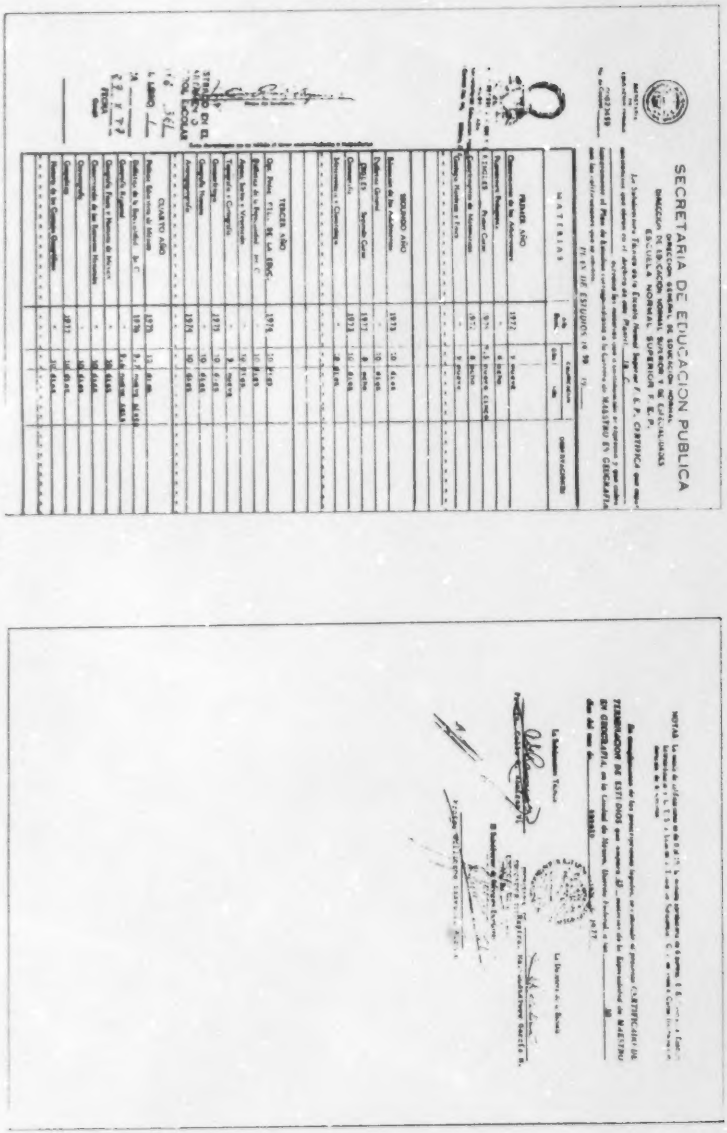

SECRETARIA DE EDUCACION PUBLICA

ESCUELA NORMAL SUPERIOR F. E. P.

MATERIAS

PRIMER AÑO

SEGUNDO AÑO

TERCER AÑO

CUARTO AÑO

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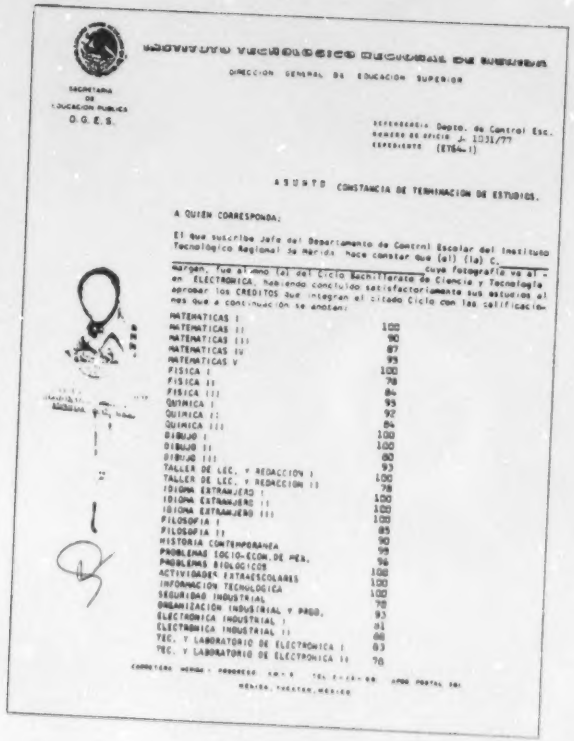
No. 14 a & b. Certificate of Completion of the *Maestro* (Undergraduate Degree)
(first and second pages)



INSTITUTO TECNOLOGICO REGIONAL DE MERIDA

SECRETARIA DE EDUCACION PUBLICA
D.G.E.S.

DIRECCION GENERAL DE EDUCACION SUPERIOR

REFERENCIA: Depto. de Control Esc.
OFICIO No. 1031/77
EXPEDIENTE (ET64-1)

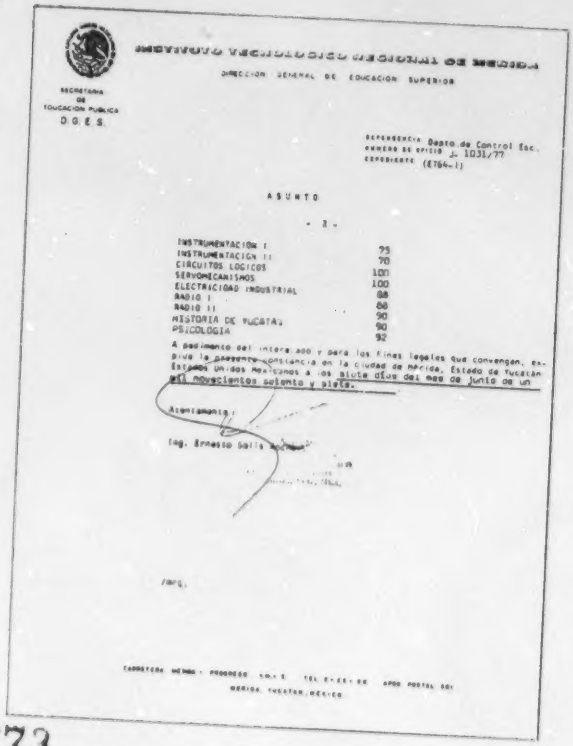
ASUNTO: CONSTANCIA DE TERMINACION DE ESTUDIOS.

A QUIEN CORRESPONDA:

El que suscribe Jefe del Departamento de Control Escolar del Instituto Tecnológico Regional de Mérida hace constar que (el) (la) C. _____ cuya fotografía va al margen, fue alumno (a) del Ciclo Bachillerato de Ciencia y Tecnología en ELECTRONICA, habiendo concluido satisfactoriamente sus estudios al aprobar los CREDITOS que integran el citado Ciclo con las calificaciones que a continuación se anotan:

MATEMATICAS I	100
MATEMATICAS II	90
MATEMATICAS III	87
MATEMATICAS IV	95
MATEMATICAS V	100
FISICA I	78
FISICA II	84
FISICA III	95
QUIMICA I	92
QUIMICA II	84
QUIMICA III	100
DIBUJO I	100
DIBUJO II	60
DIBUJO III	93
TALLER DE LEC. Y REDACCION I	100
TALLER DE LEC. Y REDACCION II	78
IDIOMA EXTRANJERO I	100
IDIOMA EXTRANJERO II	100
IDIOMA EXTRANJERO III	100
FILOSOFIA I	85
FILOSOFIA II	90
HISTORIA CONTEMPORANEA	99
PROBLEMAS SOCIO-ECON. DE MEX.	96
PROBLEMAS BIOLOGICOS	100
ACTIVIDADES EXTRAESCOLARES	100
INFORMACION TECNOLOGICA	100
SEGURIDAD INDUSTRIAL	78
ORGANIZACION INDUSTRIAL Y PROD.	93
ELECTRONICA INDUSTRIAL I	81
ELECTRONICA INDUSTRIAL II	66
TEC. Y LABORATORIO DE ELECTRONICA I	83
TEC. Y LABORATORIO DE ELECTRONICA II	78

CARRETERA MERIDA - PROGRESO KM. 5 TEL. 5-23-58 APDO. POSTAL 581
MERIDA, YUCATAN, MEXICO



INSTITUTO TECNOLOGICO REGIONAL DE MERIDA

SECRETARIA DE EDUCACION PUBLICA
D.G.E.S.

DIRECCION GENERAL DE EDUCACION SUPERIOR

REFERENCIA: Depto. de Control Esc.
OFICIO No. 1031/77
EXPEDIENTE (ET64-1)

ASUNTO

- 2 -

INSTRUMENTACION I	75
INSTRUMENTACION II	70
CIRCUITOS LOGICOS	100
SERVOMECANISMOS	100
ELECTRICIDAD INDUSTRIAL	88
RADIO I	88
RADIO II	88
HISTORIA DE YUCATAN	90
PSICOLOGIA	90
	92

A petición del interesado y para los fines legales que convengan, expido la presente constancia en la ciudad de Mérida, Estado de Yucatán Estados Unidos Mexicanos a los siete días del mes de junio de un mil novecientos setenta y siete.

Atentamente:

Ing. Ernesto Solís [illegible]

/mrs.

CARRETERA MERIDA - PROGRESO KM. 5 TEL. 5-23-58 APDO. POSTAL 581
MERIDA, YUCATAN, MEXICO

No. 15 a & b. *Constancia de Estudios*
(first and second pages)

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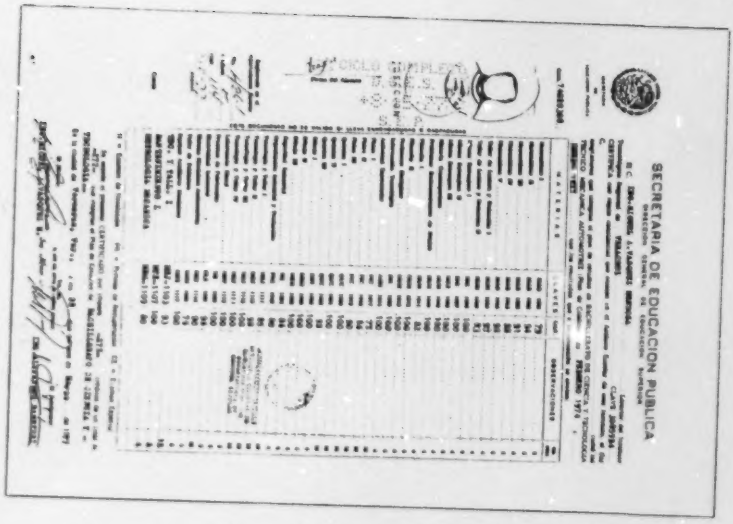

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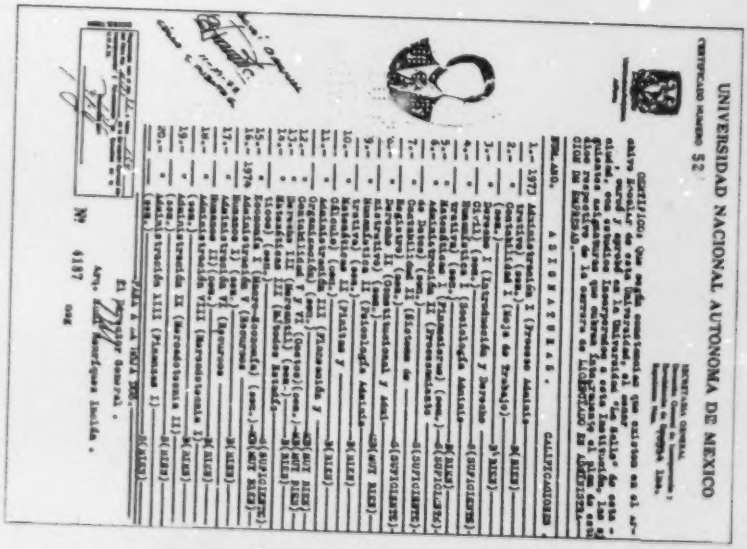

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CERTIFICADO NUMERO 525

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VIENE DE LA HOJA UNO.

CERTIFICADO DE ESTUDIOS DE LA CARRERA DE LICENCIADO EN ADMINISTRACION DE EMPRESAS EXPEDIDO A FAVOR DEL SEÑOR

FOLIO.	AÑO.	ASIGNATURAS.	CALIFICACIONES.
21.-	1974	Matemáticas IV (Probabilidad y Muestreo) (ses.)	B(BIEN)
22.-	"	Derecho V (Fiscal) (ses.)	S(SUFICIENTE)
23.-	"	Economía II (Economía de la Empresa) (ses.)	MB(MUY BIEN)
24.-	1975	Administración IV (Comunicaciones) (ses.)	MB(MUY BIEN)
25.-	"	Administración X (Comercio Internacional) (ses.)	MB(MUY BIEN)
26.-	"	Administración XI (Producción I) (ses.)	MB(MUY BIEN)
27.-	"	Administración XIV (Finanzas II) (ses.)	B(BIEN)
28.-	"	Matemáticas V (Investigación de Operaciones) (ses.)	MB(MUY BIEN)
29.-	"	Humanística XII (Problemas de México) (ses.)	B(BIEN)
30.-	"	Humanística V (Métodos de la Investigación en Ciencias Sociales) (ses.)	MB(MUY BIEN)
31.-	"	Humanística IV (Ciencia Política) (ses.)	MB(MUY BIEN)
32.-	1976	Administración VII (Relaciones Públicas) (ses.)	B(BIEN)
33.-	"	Administración XII (Producción II) (ses.)	MB(MUY BIEN)
34.-	"	Administración XVI (Auditoría Administrativa) (ses.)	B(BIEN)
35.-	"	Administración XVII (Seminario de Administración) (ses.)	B(BIEN)

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El Director General.

Arq. Raúl Enríquez Incián.

Nº 4189

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CERTIFICADO DE ESTUDIOS DE LA CARRERA DE LICENCIADO EN ADMINISTRACION DE EMPRESAS EXPEDIDO A FAVOR DEL SEÑOR

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36.-	1976	Administración XVIII (Seminario de Investigación Administrativa) (ses.)	B(BIEN)
37.-	"	Administración XV (Finanzas III) (ses.)	B(BIEN)
38.-	"	Derecho IV (Trabajo) (ses.)	B(BIEN)

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ESCALA DE CALIFICACIONES POR LETRAS: MB(MUY BIEN) B(BIEN) S (SUFICIENTE), mínima para aprobar una materia.

A petición del interesado y para los usos legales a que haya lugar, se expide el presente en la Ciudad Universitaria, Distrito Federal, a los nueve días del mes de octubre de mil novecientos setenta y siete.

El Director General.

Arq. Raúl Enríquez Incián.

Nº 4190

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CERTIFICO: Que según constancias que existen en el Archivo Escolar de esta Universidad, el señor [redacted] cursó y aprobó en la Universidad Iberoamericana, de esta ciudad, con estudios incorporados a esta Institución, las siguientes asignaturas que forman parte del plan de estudios respectivo de la carrera de LICENCIADO EN LENGUA Y LITERATURA ESPAÑOLAS.

NUM.	AÑO	ASIGNATURAS	CALIFICACIONES
1.-	1971	Historia de la Cultura en Espa-	
———	———	ña y América (1er. sem.)	MB(MUY BIEN)
2.-	"	Historia de la Cultura en Espa-	
———	———	ña y América (2do. sem.)	MB(MUY BIEN)
3.-	"	Fonética y Fonología (1er. sem.)	MB(MUY BIEN)
4.-	"	Fonética y Fonología (2do.sem.)	S(SUFICIENTE)
5.-	"	Latín I (1er. sem.)	B(BIEN)
6.-	"	Latín I (2do. sem.)	MB(MUY BIEN)
7.-	"	Corrientes generales de las lite-	
———	———	raturas hispánicas (1er. sem.)	MB(MUY BIEN)
8.-	"	Corrientes Generales de las lite-	
———	———	raturas hispánicas (2do. sem.)	MB(MUY BIEN)
9.-	"	Iniciación a las investigaciones	
———	———	literarias y composición(1er.sem)	MB(MUY BIEN)
10.-	"	Iniciación a las investigaciones	
———	———	literarias y composición(2do.sem)	S(SUFICIENTE)
11.-	"	Introducción a la Filosofía	
———	———	(1er. sem.)	S(SUFICIENTE)
12.-	"	Introducción a la Filosofía	
———	———	(2do. sem.)	S(SUFICIENTE)
13.-	"	Literatura Española Medieval	
———	———	(1er. sem.)	B(BIEN)
14.-	"	Literatura Española Medieval	
———	———	(2do. sem.)	B(BIEN)
15.-	1972	Literatura Iberoamericana I	
———	———	(1er. sem.)	S(SUFICIENTE)
16.-	"	Curso Superior de Español I	
———	———	(1er. sem.)	S(SUFICIENTE)
17.-	"	Teoría Literaria (1er.sem.)	MB(MUY BIEN)
18.-	"	Latín II (1er. sem.)	B(BIEN)
19.-	"	Literatura y Lengua Moderna Fran-	
———	———	cesa (1er. sem.)	B(BIEN)

PASA A LA HOJA 500

El Director General

Arq. Raúl Enríquez Inclán.

Nº 5129

UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO

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VIENE DE LA HOJA 498

CERTIFICADO DE ESTUDIOS DE LA CARRERA DE LICENCIADO EN LENGUA Y LITERATURA ESPAÑOLAS EXPEDIDO A FAVOR DEL SEÑOR

NUM.	AÑO	ASIGNATURAS	CALIFICACIONES
20.-	1972	Metodología de la Literatura con-	
———	———	temporánea (1er. sem.)	MB(MUY BIEN)
21.-	"	Cultura Latina (1er. sem.)	MB(MUY BIEN)
22.-	"	Literatura Comparada (1er. sem.)	S(SUFICIENTE)
23.-	"	Literatura Española de los Siglos	
———	———	de Oro (1er. sem.)	B(BIEN)
24.-	"	Curso Superior de Español II	
———	———	(1er. sem.)	S(SUFICIENTE)
25.-	"	Introducción a la Lingüística	
———	———	General (1er. sem.)	B(BIEN)
26.-	1973	Literatura Mexicana I (1er.sem.)	S(SUFICIENTE)
27.-	"	Literatura Iberoamericana I	
———	———	(2do. sem.)	S(SUFICIENTE)
28.-	"	Curso Superior de Español I	
———	———	(2do. sem.)	S(SUFICIENTE)
29.-	"	Teoría Literaria (2do.sem.)	MB(MUY BIEN)
30.-	"	Literatura y Lengua Moderna	
———	———	Francesa (2do. sem.)	MB(MUY BIEN)
31.-	"	Metodología de la Literatura Con-	
———	———	temporánea (2do. sem.)	B(BIEN)
32.-	"	Literatura Comparada (2do.sem.)	B(BIEN)
33.-	"	Literatura Española de los Siglos	
———	———	de Oro (2do. sem.)	B(BIEN)
34.-	"	Curso Superior de Español II	
———	———	(2do. sem.)	B(BIEN)
35.-	1974	Literatura Española Moderna y Con-	
———	———	temporánea (1er. sem.)	B(BIEN)
36.-	"	Filología Hispánica (1er. sem.)	B(BIEN)

PASA A LA HOJA 502

El Director General

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Nº 5130

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APPENDIX D

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Anexo 66

SECRETARIA GENERAL
Dirección General de Incorporación y Revalidación de Estudios
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VILLE DE LA ROJA DOÑ

CERTIFICADO DE ESTUDIOS DE LA CARRERA DE LICENCIADA EN TRABAJO SOCIAL EXPEDIDO A FAVOR DE LA SEÑORITA

NUM.	AÑO	A S I G N A T U R A S	CALIFICACIONES
34.-	1977	Trabajo Social en La Organización de la Comunidad II (sem.)	B(BIEN)
35.-	"	Seminario de Administración (sem)	B(BIEN)
36.-	"	El Trabajo Social en Hospitales (sem.)	MB(MUY BIEN)
37.-	"	Métodos y Técnicas de Investigación Social (sem.)	B(BIEN)
38.-	1978	Prácticas de Trabajo Social en la Organización de la Comunidad II (sem.)	B(BIEN)
39.-	"	Seminario sobre Políticas y Planeación Social (sem.)	B(BIEN)
40.-	"	Seminario de Tesis (sem.)	B(BIEN)
41.-	"	Problemas Sociales y Económicos de México (sem.)	B(BIEN)

NOTA: ESTE CERTIFICADO AMPARA CUARENTA Y UNA ASIGNATURAS ESCALA DE CALIFICACIONES POR LETRAS: MB(MUY BIEN) B(BIEN) S(SUFICIENTE), mínima para aprobar una materia.

A pedimento de lo interesada y para los usos legales a que haya lugar, se expide el presente en la Ciudad Universitaria, Distrito Federal, a los quince días del mes de enero de mil novecientos setenta.

El Director General.

Lic. Raúl Rodríguez Lacleta.

Nº 771

No. 19 b & c. Certificate of Completion of *Licenciatura* Program (except for language translation), UNAM

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Glossary

abierto	open; as in *educación abierta*.
acentuación	area of emphasis within a major field of study.
acreditada	passing, credited.
actualización	improvement; often used in reference to continuing education.
adiestramiento	training.
agropecuaria	general agriculture pertaining to crop farming and livestock raising.
alumno	student.
ampara	verb meaning "covers."
aprobado, aprobatoria	passing.
aprendizaje	learning.
archivo	file.
asesor	advisor or counsellor.
asignatura	course, class.
Asociación Civil (A.C.)	nonprofit organization.
autónoma	autonomous; denotes a certain degree of self-governance. (Both public and private institutions may be so designated.)
auxiliar	assistant.
ayudante	assistant.
bachiller	person who has completed a *bachillerato* program.
bachillerato	upper secondary program which prepares for higher education.
bien, bueno	good (*also*, well).
calificación	grade.
carrera	field of study, usually at the tertiary level.
carrera corta	short-term vocational program of study at the tertiary level, usually 1 or 2 years in length.
carta de pasante	letter or diploma stating that a student has completed all or a designated portion of required coursework in a given program of study.
cédula	professional credential or license to practice a profession, issued by the Dirección General de Profesiones of the SEP.
certificado	document; usually a transcript or degree; not necessarily issued directly by the educational institution, but rather by the incorporating or recognizing agency or institution.
ciclo	cycle; refers to educational level.
clave	key, code.

constancia	temporary document issued by an educational institution for various purposes, including proof of attendance, transcript of courses and grades, and *egresado pasante* status.
contabilidad, contaduría	accounting, bookkeeping.
Cruz Roja	Red Cross.
cuarto	fourth.
curso	course.
cursó (cursar)	followed.
deficiente	deficient (failing).
deporte	sports.
desarrollo	development.
dibujo	drawing, drafting.
didáctica	didactics, teaching methods.
diplomado	holder of a diploma.
dirección	address; division of agency or organization.
docencia	teaching.
doctor	holder of *doctorado* degree.
doctorado	doctorate.
educadora	kindergarten teacher.
educativo	educational.
egresado or *egresado pasante*	student who has completed coursework but not thesis and/or social service requirements necessary for *licenciatura* degree.
empresa	business, enterprise.
ensayador	assayer.
enseñanza	education, training.
equivalencia	equivalence of studies among institutions.
escala	scale.
escuela	school; common term for educational institutions at all levels; *also* may be subdivision of larger institution.
escolar	pertaining to school.
especialista	specialist; graduate of program of specialization.
especialización	specialization; refers to educational concentrations at all levels, particularly to a degree program at graduate level.
examen a título de suficiencia	sometimes designates a final examination taken when the *examen extraordinario* is missed or failed; may *also* designate exam to validate transfer credit.
examen de grado	oral or written defense of thesis required for *maestría* or *doctorado* degrees.
examen extraordinario	sometimes designates final exam taken when the *examen ordinario* is missed or failed.
examen ordinario	final examination.
examen parcial	examination given during school year and is an integral part of final grade.
excelente	excellent.

expediente	dossier, file.
extraescolar	outside of school; generally refers to nonformal education.
facultad	traditional subdivision of institution of higher education; similar to school or college in U.S. university.
fecha	date.
formación	training.
frecuencia	number of times a class meets each week.
grado	degree; usually refers to graduate degree.
guía	guide.
idioma	language.
informe	report.
ingresar	to enroll, to enter.
iniciación	introduction.
instituto	institute; common term for educational institutions at all levels; may *also* be subdivision of institution of higher education.
integrar	to make up a whole, to comprise.
invierno	winter.
lenguaje	language, speech.
libre	free or independent.
licenciado	holder of a *licenciatura*.
licenciatura	basic full-length undergraduate program and/or degree.
maestro	teacher; holder of a *maestría*.
materia	subject or course of study.
medición	measurement.
medio	middle; refers to entire secondary level, lower and upper.
mejoramiento	improvement.
mercadotecnia	marketing techniques.
módulo	module; meaning varies with institution; often refers to groups of courses within program of study.
nivel	level; educational level.
nocturna	evening.
obra	work, project.
octavo	eighth.
odontología	dentistry.
otorgar	to award; *also* to agree to.
otoño	fall, autumn.
pase automático	automatic access or admission.
particular	private.
perteneciente	belonging to.
pesca, pesquera	relating to fishing.
plan de estudios	curriculum.
plantel	branch, campus.

posgrado or *postgrado*	graduate (postgraduate) studies.
práctica docente	practice teaching.
pre-vocacional	former term for *secundaria técnica*.
primavera	spring.
primer	first.
privado	private.
profesional	professional; usually refers to tertiary level studies.
promedio	average of grades.
prueba	test, examination.
puericultura	child care.
quinto	fifth.
reconocimiento	recognition; one of the two ways that private institutions obtain legal validity for their programs of study.
regular	average.
reprobado	failed.
revalidación	revalidation; process of transfer of credit from one institution to another.
secretaría	ministry.
según	according to.
segundo	second.
se hace constar	the following proves.
séptimo	seventh.
servicio social	social service; period of service to the community required for most *licenciatura* programs and some upper secondary programs.
sexto	sixth.
siguiente	following.
Sociedad Anónima (S.A.)	incorporated.
suficiente	sufficient, passing.
superior	higher; usually refers to tertiary level studies.
taller	workshop.
tecnológico	technological, technical.
tercer, tercero	third.
terminar	to finish, to complete.
tesina	short thesis or report.
tesis	thesis.
título	degree; literally, "title."
trabajo	work.
único	only, unique, singular.
unidad	unit; may refer to credits or to subdivision of an institution.
unitario	unified, unitary.
varonil	masculine.
verano	summer.
vigente	in force.
vocacional	former designation for *preparatoria técnica*.

Useful References

Much of the documentation for this volume is derived from publications in Spanish which are not included in the list below. Other primary sources used include catalogs, curriculums, and documents from Mexican educational institutions, as well as numerous government publications, especially those of the Ministry of Education. Still other sources that were used extensively were the reports of the Institute of International Education (IIE) on Mexican universities and institutions.

The book is also based on responses to a questionnaire sent to all the institutions of higher education in Mexico, and on personal correspondence and interviews.

The following references have been chosen for their usefulness to persons who wish to learn more about Mexican education. The publication by Gill also contains a useful reading list on Mexico.

Asociación Nacional de Universidades e Institutos de Enseñanza Superior. *Carreras en el Sistema de Educación Superior de México*. México, D.F.: Imprenta Ajusco, 1981.

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